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The OIL AND GAS JOURNAL

NOVEMBER 27
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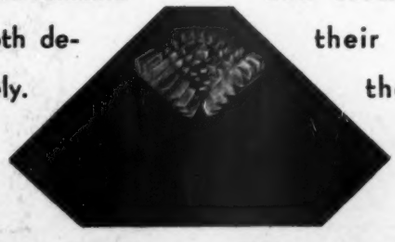

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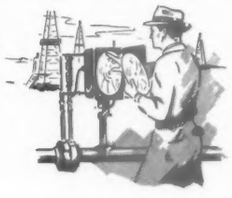

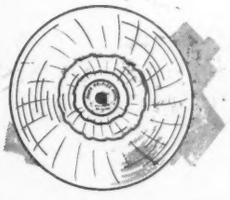

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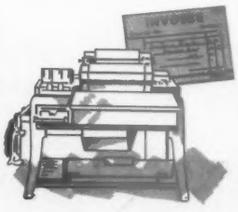

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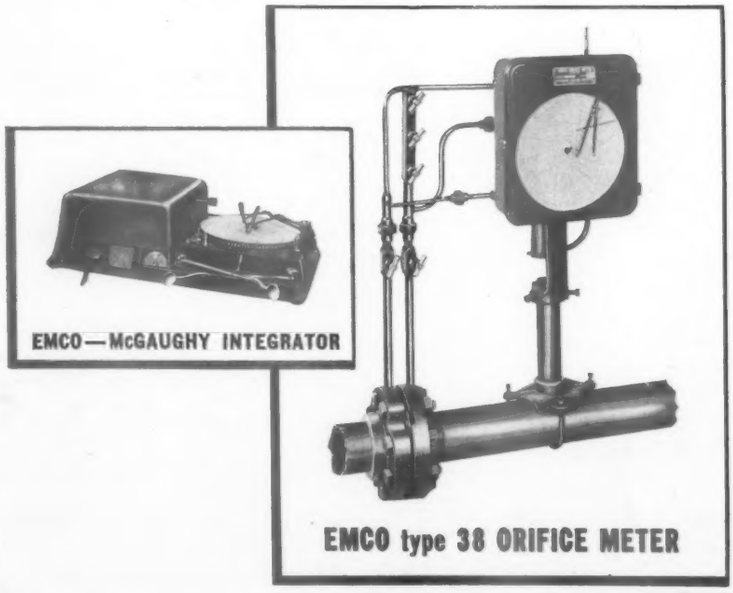

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FOUND!

A NEW WAY TO LOWER OPERATING COSTS AND INCREASE EFFICIENCY...

WHEN a major oil company in the Oklahoma City field converted its wells from electric-driven bottom-hole pumps to hydraulic bottom-hole pumps, it became necessary to run an intermediate string. 5½" Smith 80 T & C and Integral Joint Casing were chosen 100% for the job.

Subsequent operation of the new pumping system reveals that the selection of 5½" Smith Casing affords these advantages over a 4" seamless program:

(1) Lower cost than tubing. (2) Tubing not immediately available. (3) Ultimate capacity increased. (4) Permits use of bailer and recovery of reasonable amount of sand. (5) Wire-line wear on production strings minimized. (6) Permits use of original 2½" tubing instead of new ¾" tubing.

Although much of our effort is now given to defense production, A. O. Smith research on casing continues—continues striving to make a fine casing even better. A. O. Smith Corporation, Milwaukee, Wis. Offices at New York, Pittsburgh, Chicago, Tulsa, Dallas, Shreveport, Houston, Corpus Christi, Midland, Los Angeles, Seattle.

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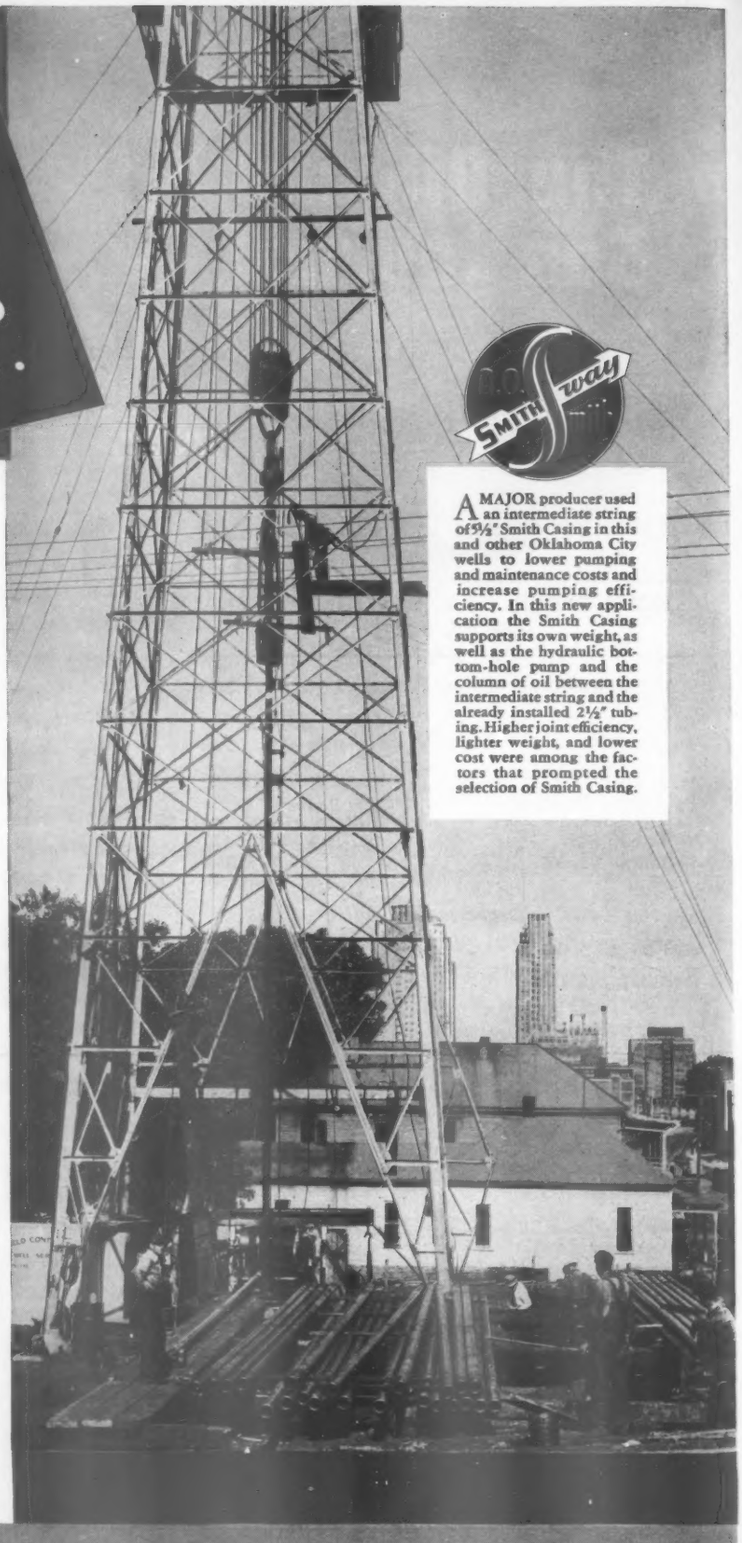
- That A. O. Smith Corporation—a major supplier of Casing, Line Pipe, and Pressure Vessels for the petroleum industry—was founded at Milwaukee in 1874... *fifteen years after Col. Drake drilled the first oil well at Titusville, Pa.*
- That today, the vast 140-acre plants of A. O. Smith Corporation engage the services of some *7,000 skilled employees.*
- That, directly and indirectly, A. O. Smith activities provide a consumer public of 60,000 individuals, whose automobiles require *10 million gallons of gasoline and 100,000 gallons of oil annually.*



A MAJOR producer used an intermediate string of 5½" Smith Casing in this and other Oklahoma City wells to lower pumping and maintenance costs and increase pumping efficiency. In this new application the Smith Casing supports its own weight, as well as the hydraulic bottom-hole pump and the column of oil between the intermediate string and the already installed 2½" tubing. Higher joint efficiency, lighter weight, and lower cost were among the factors that prompted the selection of Smith Casing.

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Trends

Record Production of Crude Oil Is Coming From Several Areas

CRUDE-OIL production last week increased to a daily average output of 4,329,365 bbl., an increase of 216,480 bbl. or 5 per cent over the previous peak for the week ending November 15. While the gain is largely accounted for by the fact there was only 1 shutdown day in Texas instead of the usual 2, the new record in output is of interest as indicating what the producing branch of the industry can do, should there be an overnight increase in demand. Last week's average daily production was 765,865 bbl. greater than the average output in November 1940. All of the principal areas are producing more crude oil than they did a year ago but 51 per cent of the increase last week over November 1940, came from Texas. Other daily increases over a year ago were: California, 45,550 bbl.; Illinois, 60,230 bbl.; Kansas, 66,850 bbl.; Louisiana, 61,205 bbl. and Mississippi, 64,630 bbl. The percentage gain in Mississippi exceeds that of any other area, its new peak in production of 78,930 bbl. daily last week comparing with a daily average of 14,300 bbl. in November last year. Gains in output in Oklahoma and New Mexico and some of the less important areas have been small over the past year.

CRUDE PRODUCTION *4,329,365 bbl. daily average—up 216,480 bbl. One year ago 3,768,953 bbl.*

CRUDE STOCKS *240,399,000 bbl. as of November 15—down 96,000 bbl. One year ago 261,619,000 bbl.*

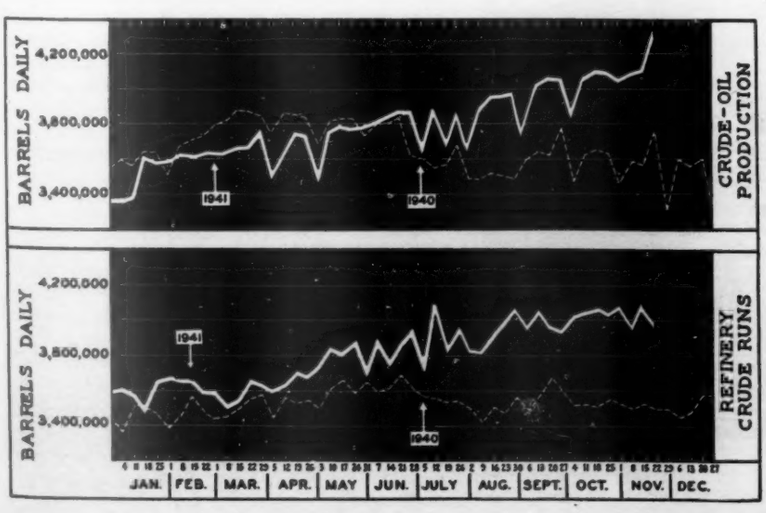
GASOLINE STOCKS **84,579,000 bbl. as of November 22—up 1,167,000 bbl. One year ago 79,417,000 bbl.*

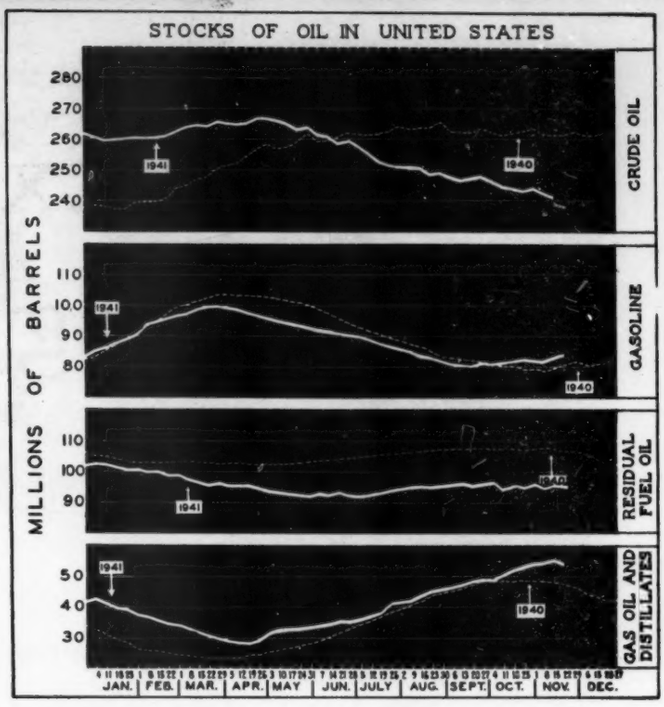
RESIDUAL FUEL-OIL STOCKS *95,982,000 bbl. as of November 22—down 11,000 bbl. One year ago 105,358,000 bbl.*

GAS OIL AND DISTILLATES *54,396,000 bbl. as of November 22—down 587,000 bbl. One year ago 47,348,000 bbl.*

REFINERY RUNS *3,995,000 bbl. daily week ended November 22—down 15,000 bbl. One year ago 3,510,000 bbl.*

*Includes 7,516,000 bbl. aviation motor fuel, up 209,000 bbl. One year ago 6,287,000 bbl.





Current production figures including available reserves are being studied by those who are looking forward to next year's requirements. These investigations show that Texas leads by a wide margin in assured output which can be made available as needed. California also has substantial supplies which can be produced as required. That state's expansion over the past year has been less than the average for the country as a whole due primarily to the loss of Japanese markets. Kansas will be able to increase its production substantially next year as fields already discovered are developed. Gains in output in the Louisiana Gulf are also in prospect.

DAILY AVERAGE PRODUCTION FOR WEEK

	Nov. 22, 1941	Bur. Mines Nov. est. of demand	November state allowables	Nov. 15, 1941
Arkansas	73,360	76,500	73,653	72,780
California	653,250	626,700	613,200	663,750
Eastern fields	113,750	114,800	.....	113,950
Illinois	396,550	408,100	.....	390,270
Kansas	254,250	253,500	257,000	255,550
Louisiana	348,005	333,200	347,058	358,770
North Louisiana	*81,955*	.....	.....	*82,120*
Louisiana Gulf Coast	*266,050*	.....	.....	*276,650*
Michigan	57,620	47,400	57,550	61,310
Mississippi	78,930	55,100	.....	76,255
Nebraska	6,500	6,200	.....	6,760
New Mexico	116,300	115,200	116,500	116,400
Oklahoma	427,100	469,400	428,000	427,650
Rocky Mountain states	109,300	109,200	.....	109,240
Texas	1,694,450	1,454,700	1,533,282	1,460,200
East Texas	*438,250*	.....	.....	*369,650*
West Texas	*332,700*	.....	.....	*285,600*
North Central Texas	*148,950*	.....	.....	*137,300*
East Central Texas	*90,450*	.....	.....	*83,050*
Texas Panhandle	*95,000*	.....	.....	*79,600*
Texas Gulf Coast	*482,350*	.....	.....	*410,800*
Southwest Texas	*106,750*	.....	.....	*94,200*
Total United States	4,329,365	4,070,000	.....	4,112,885
Total production, Jan. 1-Nov. 22, 1941		1,237,260,305 bbl.		
Same period last year		1,205,577,080 bbl.		

Both crude-oil and refinery markets generally are marking time awaiting action on the part of the Office of Price Administration which for several weeks has had under consideration requested advances in posted prices for crude oil in the Pennsylvania Grade area and in the Mid-Continent. Political angles developed this week when a group of congressmen from the oil states announced their intention to bring about a prompt decision from OPA regarding these requests. Many adjustments in refinery, wholesale and retail markets await decisions in regard to crude prices. Reports from Washington indicate that OPA's rulings will include formulas which will establish relationships between posted prices for crude oil and the key refinery markets and also establish margins to be allowed for wholesale and retail marketing.

Increased Exploration Required By Declining Discovery Rate

A rank wildcat drilling a second test on a structure in the northern part of the West Texas Permian basin, 75 miles from the nearest oil field

Probably the most widely discussed subject within the petroleum industry and government agencies whose activities are concerned with oil, has to do with reserves—the evaluation of present supplies and what has to be done to assure adequate new discoveries.

The Journal's field editor in this article—the first of a series of three—analyzes the rate at which new fields are being found and the degree of success with which reserves are being maintained from all sources.

Subsequent articles will deal with the discovery cycle based upon new discoveries, both of fields and geological principles governing the accumulation of oil, and the much debated question of allocation of reserves to the year of discovery of the field.

It is realized there are differences of opinion regarding many phases of the reserve problem. Criticism of Dr. Howard's conclusions and comment are invited.

By W. V. HOWARD

ONE of the most arresting statements made by Ralph K. Davies, deputy petroleum coordinator, before the American Petroleum Institute in San Francisco was that there was a downward trend in new discoveries and that with consumption increasing we must find more oil in enormous quantities. In support of his contention, Mr. Davies referred to estimates of reserves which had been compiled by The Oil and Gas Journal.

One factor which Mr. Davies did not take into consideration was that not all discoveries listed as such in The Oil and Gas Journal's estimates are new fields. Many millions of barrels accounted for in estimates of discoveries are of new sands in previously known fields. Another factor which was not taken into consideration is the fact that not all of the oil discovered during, say, 1938 was reported in the estimate as of January 1939 for the simple reason that not all of the fields discovered during that year were proved up by the end of the year and additional supplies of oil in fields discovered in 1938 were accounted for in subsequent estimates as extensions. One of these factors thus tends to decrease the reserves discovered in new fields and the other tends to increase it. They do not, however, cancel out.

In fact, based upon a reallocation of estimates of new oil discovered between January 1, 1935, and January 1, 1941, the writer concludes that despite the fact that the figures used by Mr. Davies are subject to some revision, this revision not only confirms the thesis that we are not discovering enough new fields but indicates that the downward trend is even more alarming than that portrayed by the deputy petroleum coordinator.

The Oil and Gas Journal's estimates of reserves indicate the supply of oil which can be produced in the future from known and proven reservoirs without the drilling of additional exploratory wells. Some drilling is, of course, required on inside locations or even on edge locations regarded as proven and in some fields this drilling may amount to several hundred wells, but none of these wells can be regarded as outposts or wildcats.

Under the head "discoveries" are included proven reserves found in new fields and in new sands in old fields. The average age of any one of these discoveries is 6 months and many of them have only one well at the end of the year. Obviously, in many cases the new field may be regarded as a major discovery, but the reserves proven in this potential major field are still only those reserves tapped by the well or wells drilled. The estimates may then be regarded as the working reserve available without further exploratory drilling. Potentially, the reserves from the fields listed are generally much larger than the estimates given after an average life of only 6 months.

Reserves in New Fields

The development of a new field frequently takes several years to complete and a new cycle of development may be opened many years later by the discovery of a deeper sand. There may be delays such as occurred at K.M.A., where the deep pay found in 1931 was not developed beyond the discovery well for several years. In the Illinois fields deep pays are found and developed during the first stages of drilling, while in such fields as Anse La Butte and Vinton, Louisiana, 40 years may elapse before the deeper possibilities become known. Discoveries as reported by The Oil and Gas Journal may thus fall into two classes, namely those found during the early period of development and those found in the same fields at some later time.

Table 1 shows the reserves allocated to fields discovered since January 1, 1935. The amount credited to the fields during the first year can be considered on the average to be between 40 and 60 per cent of the total that will eventually be allocated to those fields during the first period of development. In an exceptional year, such as 1938, estimated reserves added during the second year may greatly exceed that allocated during the first year.

Including the estimated additional oil which will be added to the reserves of the new fields covered by Table 1, new fields discovered during 1939 added less than half as much to reserves as those found during 1937 and 1938. During these two years discoveries were at too high a rate for the good of the industry as reflected in market trends over the subsequent three years. This condition may be considered to have been partially corrected by the decline in 1939. However, another drop of nearly 50 per cent in 1940 has carried the correction too far and, although the figures have not been tabulated, it appears that 1941 will not be very different from 1940 as far as new fields are concerned.

TABLE 1—ALLOCATION OF NEW OIL FOUND

(In thousands of barrels)

Year—	Added to new fields found in—						Added to new fields	Added to old fields	Added through revision	Total new oil found
	1935	1936	1937	1938	1939	1940				
1935	875,135	.....	.....	.....	.....	.....	875,135	445,415	840,000	2,160,550
1936	229,300	538,787	.....	.....	.....	.....	768,087	414,324	840,000	2,022,411
1937	217,935	281,895	924,386	.....	.....	.....	1,424,216	775,106	840,000	3,039,322
1938	130,940	26,484	343,971	606,757	.....	.....	1,108,152	334,586	840,000	2,282,748
1939	173,015	116,250	455,211	1,094,383	422,384	.....	2,261,243	461,185	1,083,398	3,805,826
1940	1,490	43,770	265,750	272,869	196,830	253,204	1,033,913	250,175	466,068	1,750,156
Total	1,627,815	1,007,186	1,989,318	1,974,009	619,214	253,204	7,470,746	2,680,801	4,909,466	15,061,103
Estimated future	.....	10,000	100,000	125,000	175,000	200,000	610,000	.....	.....	.....
Total new fields	1,627,815	1,017,186	2,089,318	2,099,009	894,214	453,204	8,080,746	.....	.....	.....

TABLE 2—DISCOVERY REQUIREMENTS—1935-1941

(All figures in thousands of barrels)

Year—	1934	1935	1936	1937	1938	1939	1940	*1941
Production	903,104	990,620	1,089,114	1,264,117	1,200,883	1,255,784	1,338,237	1,400,000
Increase	.....	87,516	98,494	175,003	—63,234	54,901	82,453	61,763
A—Basis 11 Years' Supply								
11 times increase	.....	962,676	1,083,434	1,925,033	—695,574	603,911	906,983	679,393
Total requirements†	.....	1,953,296	2,172,548	3,189,150	505,309	1,859,695	2,245,220	2,079,393
New reserves	.....	2,160,550	2,022,411	3,039,322	2,282,748	3,805,826	1,750,156	.....
Excess	.....	207,254	—150,137	—149,828	1,777,439	1,946,131	—495,064	.....
§Cumulative excess	‡2,242,856	2,450,110	2,299,973	2,150,145	3,927,584	5,873,715	5,378,651	.....
B—Basis 13 Years' Supply								
13 times increase	.....	1,137,708	1,280,422	2,275,039	—822,042	703,713	1,071,889	802,919
Total requirements†	.....	2,138,328	2,369,536	3,539,156	378,841	1,959,497	2,410,126	2,202,919
New reserves	.....	2,160,550	2,022,411	3,039,322	2,282,748	3,805,826	1,750,156	.....
Excess	.....	22,222	—347,125	—499,834	1,903,907	1,846,329	—659,970	.....
§Cumulative excess	‡436,648	458,870	111,745	—388,089	1,515,818	3,362,147	2,702,177	.....
C—Basis 15 Years' Supply								
15 times increase	.....	1,312,740	1,477,410	2,625,045	—948,510	823,515	1,236,795	926,445
Total requirements†	.....	2,303,360	2,566,524	3,889,162	252,373	2,079,299	2,575,032	2,326,445
New reserves	.....	2,160,550	2,022,411	3,039,322	2,282,748	3,805,826	1,750,156	.....
Excess	.....	—142,810	—544,113	—849,840	2,030,375	1,726,527	—824,876	.....
§Cumulative excess	‡—1,369,560	—1,512,370	—2,056,483	—2,906,323	—875,948	850,579	25,703	.....

*Estimated. †Production + n × increase, where n = 11, 13 or 15.
‡Based on A.P.I. estimate as of January 1, 1935. §Total above basis.

Reserves Added to Old Fields

Reserves are added to old fields mainly by reason of the discovery of deeper pays. Once a field has been developed, it may be considered almost inevitable that the structure will be tested to the lowest known possible pay, within limits set by ability to drill. It is impossible, however, to predict with any degree of accuracy whether this deeper development will be carried on during the first or the fourth decade of the life of the field. In Table 1, the amount credited to old fields during 1935 and 1936 includes a large percentage added to what were then new fields. Of the big increase during 1937, two-thirds was due to the deep-sand development at K.M.A. However, the figures presented indicate that we may add during a normal year approximately 2 per cent of the total reserve for additions to old fields and this amount may increase to 6 per cent during a year when a major deep pay is found. Possibly 3 per cent is a fair average.

Revision of Previous Estimates

Since most estimates are made during the early life of a field, they are always subject to revision. The principal reasons for this revision are (*a*) variation between actual ultimate production and expected ultimate production, (*b*) increased recovery due to improved recovery methods, and (*c*) the slow growth of fields through pushing out of development one location at a time so that no single small extension receives mention.

Since early estimates are normally made on a conservative basis, these three factors combine to cause the great majority of revisions to be upward. During 1938, the cumulative effect of these revisions was so great that it was necessary to revise completely The Oil and Gas Journal's estimates for all fields and the amount of the revisions during the years 1935-39 was almost 4,500,000,000 bbl. In Table 1, these revisions have been arbitrarily allocated to the different years. Revisions made during 1940 added another 466,068,000 bbl. to the total reserve making the average annual revision approximately 4 per cent of the total reserves.

Effect of Additions to Reserves

From the standpoint of oil available for ultimate recovery, it is of little importance whether the new reserves come from new fields, new sands or simply a realization that early estimates were low. However, from the standpoint of oil immediately available it is of great importance. Oil from new sands or new fields is normally flush production which increases the amount available at the present time. Oil added by revision of estimates normally extends the expected productive life of the field.

There is a very definite limit to the possibilities of deeper sands. In many areas, such as Kansas and Illinois, these possibilities are negligible. In California they are very large. Nevertheless, they constitute a reserve which can be evaluated within relatively narrow limits. If we do not find new fields in sufficient quantity to maintain our supply of flush production, it is necessary to draw on this reserve with consequent further endangering of our future.

The discovery rate is unpredictable in so far as additions to our reserves are concerned. We may assume that there is a correlation between the number of discoveries and the number of wildcats drilled. But there is no correlation between the number of discoveries and the average reserves contained in those discoveries. We now find some 250 fields a year, most of which are small. A single 1,000,000,000-bbl. field discovered during 1940 would have tripled the average reserve of our 1940 discoveries. Actually, we are not finding the billion barrel fields, nor even the 500,000,000-bbl. fields.

There have been periods in the past when our discovery rate has fallen off. Frequently pessimists have told us that the American oil industry has passed the peak. We passed a discovery peak in 1937 and 1938 and the trend is still down although we have no way of knowing that we will not strike another peak, even a higher one, in the future. However, prospective demands for crude in 1942 necessitate redoubling our effort to find new fields now. The wildcatting campaign planned by the industry indicates that it is fully aware of our immediate danger.

There is no doubt but that some day we shall pass our last peak and that reserves will dwindle from that point on. So long as the country contains as much untested but potentially producing territory as it does now, it is probable that that last peak is still in the future. When our reserves fail to keep up with demands there is still an enormous potential supply available at a price. The tar sands of the Athabaska and oil shales contain many times our present reserves. Hydrogenation of coal will provide oil for many centuries. However, use of these resources is based upon prices much higher than we now pay for petroleum products and utilization of any of them would require development which would take many years and a capital investment comparable to the total now invested in the oil industry.

The long range picture shows no danger of a

(Continued on Page 42)

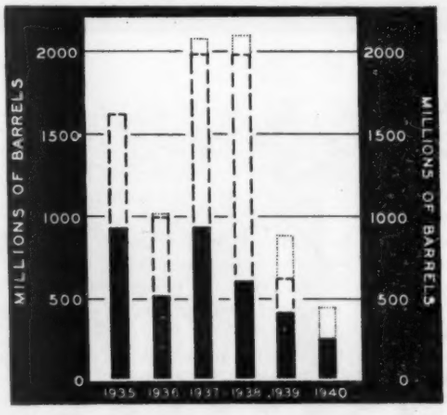


Fig. 1 (right)—Estimated reserves in new fields. The amount allocated during the year of discovery is shown in solid black. Additions to January 1, 1941, are bounded by broken lines and estimated future additions are bounded by dotted lines

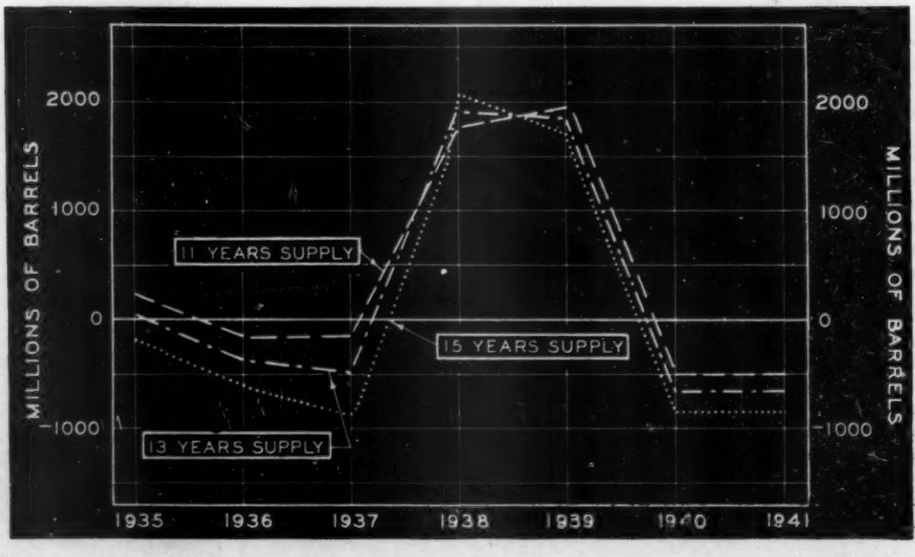
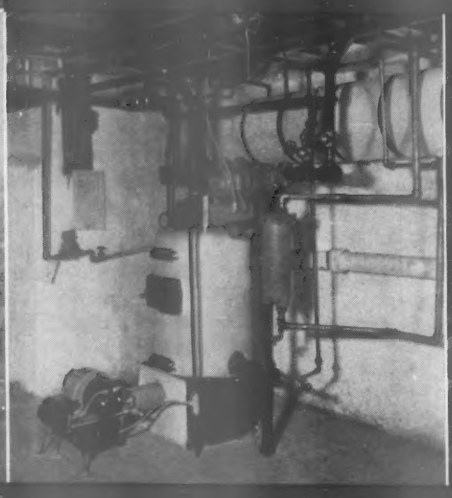


Fig. 2 (below)—Shows the relationship between the quantity of new oil found and requirements (0 line) based on shortage ((11 years' supply), optimum rate (13 years' supply) and excess (15 years' supply) 1941 estimated

Demands in
New Record



NEW YORK, Nov. 25.—For the first time in its history the oil industry of the United States is being called on to supply its domestic and foreign consumers with more than 1,500,000,000 bbl. of crude oil and refined products in a single year. Domestic and export demand for refined products plus 32,500,000 bbl. of crude-oil exports will approximate 1,570,000,000 bbl. this year, an increase of 8 per cent from the total of 1,454,000,000 bbl. the industry was called on to supply in 1940.

With the forces that accounted for the 1941 increase still in effect as 1942 approaches, prospects for the coming year are that there will be another substantial increase in demand. In an address before the Interstate Compact Commission meeting recently, Dr. A. G. White, chief of the Division of Petroleum Economics of the U. S. Bureau of Mines, estimated that in 1942 there will be an increase of 6 to 7 per cent over 1941 demand. An increase of 6.5 per cent would raise the over-all demand to 1,672,000,000 bbl. in 1942. The magnitude of the steadily increasing demand for petroleum and its products is shown in Fig. 1 and by a comparison of the 1942 estimate with the actual demand of the same year of the preceding decade. In 1932 over-all demand was 939,000,000 bbl. Next year, according to present indications, it will be 80 per cent greater.

There will be a new factor that may affect petroleum consumption to a considerable extent next year. This is increased taxes. If, for example, the proposed 15 per cent pay-roll tax were to be levied it would more than offset the indicated gain in national income which is a major consideration in forecasting future motor-fuel demand. Such a tax, it is believed, could not only eliminate the presently indicated increase but also result in a decline in the very substantial consumption in pleasure cars.

A pay-roll tax would also affect the use of fuel oil for domestic heating, the use of kerosene and the use of lubricating oil for automotive purposes. Increased income taxes that will be in effect for the first time next spring may also have some adverse effect on consumption though such effect would, of course, be minor compared to a pay-roll tax which would affect all wage earners.

The accompanying table lists estimates of 1942 demand for crude oil and the principal refined products and compares them with the indicated 1941 demands. Briefly, it envisions:

1. Domestic demand for crude oil that will total 1,494,000,000 bbl. which will be an increase of 90,000,000 bbl. or 6.4 per cent.

2. Over-all demand for motor fuel that will total 737,000,000 bbl., an increase of 54,000,000 bbl. or 8 per cent. Domestic demand is expected to rise 7.5 per cent, the greater gain in exports accounting for the additional 0.5 per cent in total demand.

3. Increase in demand for residual fuel oil of 6.0 per cent or 23,300,000 bbl., which will raise the total to 421,300,000 bbl.

4. Demand for distillate fuels of 209,000,000 bbl., an increase of 15,000,000 bbl. or 7.7 per cent.

5. Demand for kerosene of 76,400,000 bbl. which will be 2,900,000 bbl. greater than in 1941 or an increase of 4 per cent.

6. Demand for lubricating oil of 44,300,000 bbl. which will be 4,200,000 bbl. above 1941, a 9.4 per cent gain that will be accounted for in part by increased exports and increased industrial requirements.

Crude Oil

If the anticipated 1942 demand for crude oil materializes, the producing branch of the industry should provide no less than 1,500,000,000 bbl. next year. This volume, plus imports and minus exports, will exceed runs to stills by a slight margin and result in a corresponding increase in stocks. Present stocks are regarded as being close to minimum working levels and the opinion is held by some that they should be increased as a measure of national defense. In view of the prospective increase in demand, a corresponding increase in stocks would not alter the reciprocal days' supply on hand. Increasing the production from the indicated 1941 level of 1,390,000,000 bbl. to 1,500,000,000 bbl. would be an increase of 8 per cent.

Runs to stills are predicated on the demand for motor fuel to be produced from crude-oil and the yield to be obtained. Some in the industry be-

THE PICTURES

Top of page: This picture, taken several years ago, may be duplicated in the not-distant future. Passenger-car manufacture will drop 50 per cent in 1942, so used-car sales will rise and many more older cars will be in operation. Above: As the nation girds for defense, warplanes will require an increasing production of high-octane fuel. This is one of the newer fighting ships. Left center: Thirty per cent more oil burners were sold in the first 8 months of 1941 than in 1940, indicating another substantial gain in heating-oil consumption this winter. Center: Military consumption of oil products is increasing rapidly. Here tanks, most of which are now equipped with aviation engines, are being fueled in Tennessee. Extreme right: Lower fares have induced many travelers to use buses instead of railroads. A modern bus, operating between Cleveland, Ohio, and Pittsburgh, Pa., is shown here. Buses are growing consumers of both gasoline and diesel fuel.

1942 to Establish for the Industry

FORECAST FOR 1942

Domestic crude-oil producers, refiners, and natural-gasoline manufacturers and importers will be called upon to supply 1,672 million barrels of petroleum in 1942, a daily average of 4,580,000 bbl.

Gasoline demands next year will average more than 2 million barrels daily, a requirement which exceeds the domestic crude-oil production of 1925.

Gains in demands for other products will range from 4 to 9.5 per cent.

These are some of the highpoints of this 1942 projection which discusses the outlook for next year based on known conditions at this time. The author consulted with several of the petroleum industry's leading economists in arriving at the estimates explained in this article.

By J. P. O'DONNELL

lieve there will be greater utilization of natural gasoline both as such and as a blending agent. Others anticipate a greater yield and some economists are reported to be basing 1942 estimates on a yield of 45 per cent. This figure was not reached in any 1941 month but was equaled or exceeded in each of the last 5 months of 1939 when it reached a high of 45.8 per cent in November. In order to meet the 1942 demand for motor fuel it is estimated that runs to stills of 1,494,000,000 bbl. will be required, an increase of 90,000,000 bbl. or 6.4 per cent from 1941. Such a demand will tax refining capacity east of California and for that reason it is believed that if materials could be obtained, a considerable expansion program would be undertaken in 1942.

ESTIMATE OF 1942 DEMANDS FOR CRUDE OIL AND REFINED PRODUCTS

(Data in millions of barrels)

Product—		Est. demand 1941	Est. demand 1942	Volume gain	Per cent gain
Motor fuel:	Domestic	659	707	48	7.5
	Export	24	30	6	21.7
	Total	683	737	54	8.0
Residual fuel oil:	Domestic	383	406	23	6.0
	Export	15	15.3	.3	2.0
	Total	398	421.3	23.3	6.0
Gas oil and distillate:	Domestic	175	195	20	11.5
	Export	19	14	—5	—26.0
	Total	194	209	15	7.7
Kerosene:	Domestic	69.5	73.7	4.2	6.0
	Export	4.0	2.7	—1.3	—32.5
	Total	73.5	76.4	2.9	4.0
Lubricating oils:	Domestic	31	34	3	9.5
	Export	9.5	10.3	1.2	8.5
	Total	40.5	44.3	4.2	9.4
Crude oil runs:	Total	1,404	1,494	90	6.4
	Dy. ave.	3.85	4.1	.25	6.4

Motor Fuel

The principal considerations in estimating motor-fuel demand are automobile registration figures and the consumption of fuel per vehicle. Passenger-car production may be reduced as much as 50 per cent next year but registration will not be affected so materially since there will be a substantial reduction in the number scrapped and an increase in the number of used-car sales. Also important is the fact that while passenger-car production will probably be halved, production of trucks, particularly of the heavy-duty type, will rise. Military requirements, rising by leaps and bounds, will also be a greater factor next year.

Gasoline consumption per vehicle is intimately associated with the national-income rate. With some economists predicting an increase of as much as 10 per cent in the national income, consumption per vehicle should rise accordingly. However, the effect of higher taxes should temper the latter.

Exports of gasoline are scheduled to rise as lend-lease requirements widen and predictions have been heard of an increase of as much as 65 per cent. Domestic motor-fuel demand is expected to reach 707,000,000 bbl., an increase of 48,000,000

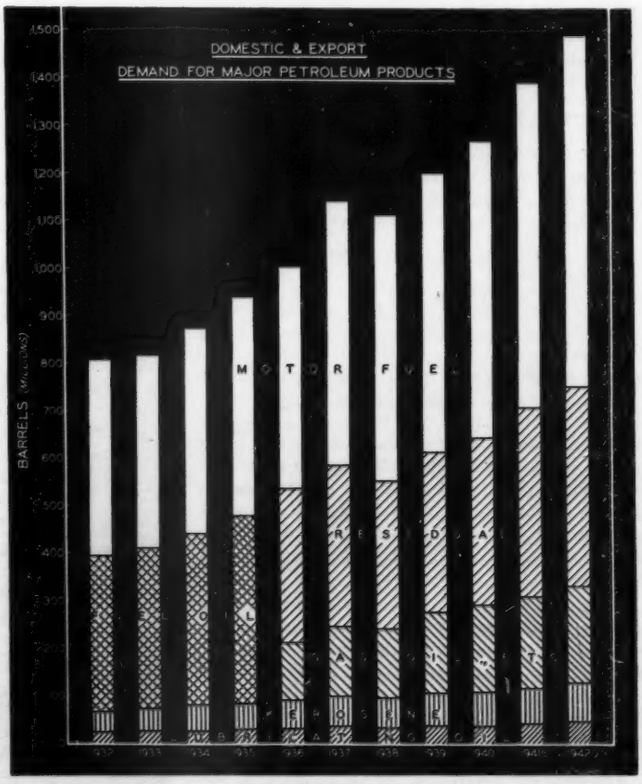


Chart showing demand for various petroleum products by years from 1932 forward, including the estimated requirements for 1942. Featured are the relatively substantial increases in gasoline and residual fuel

This Week...

A reduction of 2.5 cents per barrel in the charge for transporting most Texas and New Mexico crude oil from fields to coastal refineries and other anchorage terminals becomes effective December 1 on the Humble Pipe Line Co. system. The company handles about 140,000,000 bbl. of oil annually.

●

About 650 to 700 bbl. of daily production in North Texas switched connections as a result of the move of purchasers to adjust postings there November 6. Had the upward adjustment to the general Mid-Continent market stuck about 3,000 bbl. daily would have changed from one buyer to another.

●

A federal district judge in Michigan ruled that pumpers and roustabouts, if subject to the minimum wage and overtime provisions of the Fair Labor Standards Act at all, must be paid for all hours spent on a job when required or expected to be on or near the premises, whether actually performing manual duties or not.

●

Delaware sand production in southwestern Pecos County, Texas, appeared to have been discovered this week. Opened for future exploration is extensive territory roughly paralleling on the west the chain of lime fields. Delaware sand produces in Ward and Loving counties.

●

This week's crude-oil production will send 1941's cumulative total above the aggregate annual output for all previous years, excepting 1940. Yield for the week ended November 22 of 4,329,365 bbl. daily is 5 per cent higher than any average previously attained by the industry.

OPC is now studying the latest conservation plan in a series presented by California operators, is expected to say "yes" or "no" within 2 weeks. No details have been released in California or Washington. Rumor has it that the proposed plan continues current conditions on the Pacific Coast essentially unchanged.

●

A congressional bloc of oil-state representatives are working on Leon Henderson, price administrator, seeking abolishment of his orders placing a ceiling on crude oil and petroleum products. So far he has resisted. Votes for his general price-fixing legislation may be the stakes.

●

Senator Connally opens a campaign to have his "hot oil" law made a permanent part of federal statutes.

●

All licenses authorizing the exportation of petroleum products to Spain, its possessions, Tangier, Algeria, French Morocco and Tunis, revoked by Economic Defense Board. Aid to British campaign in Africa is objective.

●

Legislation may be required to offset the apparent determination of the Internal Revenue Bureau to force capitalization of footage-contract drilling costs. Industry is shying from opening up entire tax question fearful it will come off second best.

●

American oil companies refuse approval of Mexican oil expropriation settlement which Department of State has sanctioned. Mexico planning expenditure of $2,000,000 received from United States for its silver and by loans in exploration for oil in Lower California and on the Mexican side of the Rio Bravo between Laredo and Tia Juana.

●

Critical analysis of crude-oil discoveries not only confirms but magnifies the concept that vigorous exploration is vital with the organization, tools and encouragement that have been proven effective by past experience.

PICTURES OF DRILLING RIGS AGAINST A BACKGROUND OF THE OKLAHOMA STATE CAPITOL AT OKLAHOMA CITY WERE FAMILIAR ALL OVER THE NATION A FEW YEARS AGO. AT THAT TIME THE FIELD WAS FLUSH; LEGISLATORS DEBATED OVER ALLOWING AN OPERATION ON THE CAPITOL GROUNDS; AND DIRECTIONAL DRILLING (TO TAP THE RESERVOIR UNDER THE CAPITOL ITSELF) WAS RELATIVELY NEW. THE RIG SHOWN HERE IS A NEW OPERATION OF PHILLIPS PETROLEUM CO., MARKING A REVIVAL OF DRILLING IN THE POOL. IT IS ON THE CAPITOL GROUNDS AND WILL DRILL NORTH UNDER THE CAPITOL BUILDING. STATE EMPLOYES HAVE NAMED THE WELL 1 PETUNIA, BECAUSE IT IS ON A FLOWER BED.

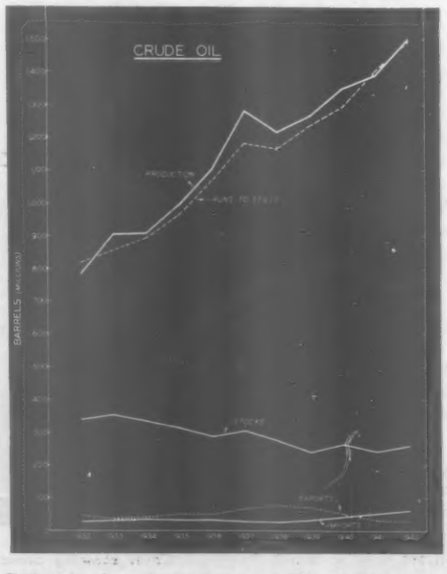
bbl. or 7.5 per cent and exports, to total 30,000,000 bbl., up 6,000,000 bbl. or 21.7 per cent. The over-all gasoline demand for 1942 is estimated at 737,000,000 bbl. or 8 per cent greater than in 1941.

Residual Fuel Oil

There is a marked similarity between domestic demand for residual fuel oil and indexes of industrial activity. Therefore, a rise in the latter may be expected to be paralleled by an increase in the former. There is no question that industrial activity will be sustained at a higher level in 1942 than in 1941 and there are predictions that the Federal Reserve Board index will reach a high of 185 late in 1942. Practically every use to which residual fuel oil is put should demand greater quantities in the coming year with the possible exception of office and apartment-building heating, which will depend on weather conditions.

One important use of residual fuel oil which is certain to increase is in marine vessels. This country is now engaged in the greatest shipbuilding program in its history and many of those vessels will be coming off the ways next year. In addition there is the increased naval activity and the prospect of a growing volume of international trade stimulated by the revised neutrality law which will contribute to an increase in demand. Exports of residual fuel may rise slightly and demand as a whole is expected to reach 421,300,000 bbl., a 6 per cent increase.

Demand for gas oil and distillates is dependent principally on domestic heating installations and the weather. Oil-burner installations have increased and demand for heating oils should increase proportionately if temperatures are normal. The U. S. Department of Commerce reports shipments of oil burners for the first 8 months of 1941 at 193,269 units, a 30 per cent increase over the number shipped in the same months of 1941. Apparently, the percentage gain will be less for the year as a whole as a result of the East Coast shortage scare and difficulty in obtaining materials for their manufacture.



Projection of production, runs to stills, stocks, exports and imports for 1942 on the basis of year-end estimates

Weather is an important factor in heating-oil demand and since the coming winter is expected to be comparatively mild no increase like the nearly 20 per cent gain of 2 years ago is anticipated. Exports of heating oils will probably decline in 1942. This decline will be substantial percentagewise. The over-all increase is to approximate 15,000,000 bbl. which will be 7.7 per cent above 1941 demand.

Kerosene

Prospects for kerosene in 1942 are difficult to evaluate. Despite the pronounced improvement in factors believed to be associated with kerosene demand, domestic requirements rose less than 1 per cent in the first 8 months of 1941. It is believed that some of these factors will be more effective in 1942 and that, accordingly, there will be an increase in domestic demand. This is expected to be offset by a decline in exports so that the estimated over-all demand of 76,400,000 bbl. will be but 4 per cent greater than in 1941.

(Continued on Page 42)

United States-Mexico Pact Does Not End Oil Controversy

By HENRY D. RALPH

WASHINGTON, D. C., Nov. 25.—The agreement between the United States and Mexico signed here November 19 settles most of the controversies between the two governments but leaves the problem of the expropriated oil properties virtually where it has been for the past 3½ years.

Machinery is provided for further negotiation of the oil matter, but it would appear that final settlement depends almost entirely on the willingness of the Mexican Government to offer terms acceptable to American owners of the expropriated properties.

In New York, W. S. Farish, president of the Standard Oil Co. (New Jersey), again made clear that the American companies could not accept the agreement for three reasons:

1. It purports to validate the original confiscation, which violated international law, and thereby jeopardizes all foreign investments.

2. It promises payment over a period of 11 years from the time of expropriation by a government which already is now hopelessly in default on its foreign debts, and thereby repudiates the principles enunciated by the U. S. Government that valid expropriation is conditioned on the payment of "adequate, effective, and prompt" compensation.

3. Aside from these fundamental principles, the agreement itself is so vague and ambiguous as to seem to the companies dangerous; and it binds the companies to accept a speculative promise in exchange for their tangible properties.

Standard Property's Production

Subsidiaries of the Standard of New Jersey represent the largest American interest involved in the agreement. The production of Standard properties expropriated by the Mexican Government now total approximately 11,000 bbl. daily. The company's properties included one refinery and pipe line and marketing facilities. Smaller American interests are owned by subsidiaries of Cities Service Oil Co., Continental Oil Co., and Standard Oil Co. of California. The Sinclair properties, which were expropriated, were purchased by the government last year. In addition there are other American oil interests which were not expropriated by the government and are not involved in the agreement at this time.

Holdings which represent more than 50 per cent of the crude-oil production and refinery capacity in Mexico are owned by the Shell interests and are not included in the American agreement.

The agreement, which is not a treaty and does not require any action by Congress, covers five subjects in addition to an exchange of notes on the oil question, and is designed to rehabilitate Mexico's economy, largely through financial aid by the United States.

Mexico has made a token payment of $9,000,000 for the expropriated American oil properties, this sum to be held in escrow and returned to Mexico if no agreement is reached. Each government is to appoint an expert within 30 days and the two experts, together with a technical staff, are to gather evidence in Mexico on the value of the oil properties. If the experts reach an agreement within 5 months on the payments to be made by Mexico the oil controversy will be ended on the basis of their agreement. If they do not agree within 5 months, each expert has 30 days in which to make an individual report to his government, after which the two governments will attempt to negotiate a settlement, and if this is unavailing in an additional 5 months, or by October 19, 1942, the $9,000,000 will be returned to Mexico and the situation will be back where it has been since the expropriation of March 18, 1938.

Agrarian claims which have arisen out of expropriations since 1927 are settled in a separate claims convention under which Mexico will pay $40,000,000. Under two agreements with the U. S. Treasury, this Government will buy 6,000,000 oz. of Mexican silver a month at 35 cents an ounce, giving the Mexican Government more than $2,000,000 a month, and the U. S. Treasury will use up to $40,000,000 from its stabilization fund to stabilize the Mexican peso by buying Mexican currency with United States dollars.

Would Purchase Mexican Bonds

Another in the series of agreements provides that the Export-Import Bank will purchase $30,000,000 of Mexican highway bonds during a 3-year period, to be used in completing the Pan American Highway to the Guatemala border and for other road projects.

The final point in the agreement calls for negotiation of a reciprocal trade agreement between the two countries at some time in the near future. In this trade agreement Mexico undoubtedly will ask for lower duties on many Mexican products imported by the United States, particularly minerals and petroleum. The trade agreement with Venezuela cut in half the exise tax on imported petroleum within certain quotas and Mexico has been sharing in this reduction but with a very small quota. Mexico complains that the quotas were based on a period during which Mexican oil was embargoed by United States oil companies in retaliation for the expropriation, and probably will ask that the quotas be enlarged or based on a different period so that more Mexican oil can be sold in this country at reduced import levies.

While not mentioned in the agreement, it is expected that settlement of the various difficulties will permit Mexico to obtain much larger quantities of oil and mining machinery and other equipment through more lenient policies on the part of this Government in granting export licenses and priorities. Mexico also hopes that the agreement will result in a renewal of investments of American capital in business enterprises south of the border.

Two views may be taken of the oil section of this agreement. An optimistic view is that the Mexican Government has now agreed to the principle of making compensation for its expropriations, adjusting its claims, and paying its debts. Because the United States has accepted the Mexican proposals for settling the oil controversy the Mexican Government may be inclined to be more lenient in the matter of actual payments than it has been heretofore and might even agree to making some payment for subsoil rights in the oil properties.

A pessimistic view is that the Mexican Government has won its point of refusing to agree to more than a nominal payment for the oil properties, has used the United States desire for hemispherical defense solidarity as a lever to win unprecedented concessions, and will obtain dollar payments and credits from the United States far greater than any payments it may make for the expropriated oil properties. By stalling the negotiations during the next 11 months and refusing to reach any agreement, the Mexican Government could avoid making any payment for the oil properties and would then get back its $9,000,000. Certainly the agreement is far short of the policy laid down by U. S. Secretary of State Cordell Hull in earlier notes to Mexico in which he insisted on prompt and effective compensation for all expropriated properties. A face-saving provision is inserted in the oil agreement which declares that this is a special case and is not to be considered a precedent for settling other controversies. Presumably this is for the purpose of maintaining this Government's position that other nations must make compensation for property expropriated from American nationals.

Would Make Connally Act Permanent

WASHINGTON, D. C., Nov. 24.—Sen. Tom Connally, of Texas, today introduced legislation to make the Connally Hot-Oil Act permanent. The act was originally passed in 1935 and has been extended from time to time. The Senate approved permanent extension of the law 2 years ago, but the House blocked it and the present extension is due to expire next year.

"The Petroleum Conservation Division reports that the enforcement of the act has been an outstanding success and I believe that the time has now come to make this act a permanent piece of legislation," Senator Connally explains. "The experimental period during which the act has been tried has demonstrated that this method of regulating the shipment of "hot" oil is satisfactory.

"The Connally Hot-Oil Act has greatly aided in stabilizing prices and production in the oil industry. When the act was first passed, the industry was in a state of chaos, but the Connally Act has greatly improved its economic stability."

STATE CAPITALS...

TEXAS

EIGHT SHUTDOWN DAYS were called for in the statewide proration order issued for December. The November order also called for 8 shutdown days, but the change from a 30-day month to a 31-day month gives one more producing day for December than in the current month. Otherwise the commission changed the current schedules very little.

Some fields picked up increases in allowables because of new wells drilled, new fields were reduced to old-field status, and Old Ocean was cut from 20,949 bbl. to 20,639 bbl., East Placedo was raised from 420 bbl. to 630 bbl., and Keeran was raised from 708 bbl. to 1,106 bbl.

The estimated net allowable at the start of the month, as figured by commission statisticians, was 1,555,192 bbl. daily, an increase of 21,909 bbl. over that of November 1 and more than 14,675 bbl. over the current allowable. For the third successive month, the total net was higher than the U. S. Bureau of Mines estimate of demand. this time by an estimated 21,060 bbl. after the 3.5 per cent probable underproduction has been deducted.

The list of fields exempted from shut downs was unchanged, and the shutdown days were fixed as December 6, 7, 13, 14, 21, 25, 28, and 30. Daily allowable comparisons on October 1, November 1, and December 1 by districts were:

	Oct. 1	Nov. 1	Dec. 1
Southwest Texas	321,950	322,266	325,552
Gulf Coast	357,359	351,557	354,125
East Central	94,757	96,518	97,335
East Texas	511,422	511,422	511,422
West Central	58,964	59,528	58,708
West Texas	353,575	360,208	363,192
North Texas	154,480	157,059	159,810
Panhandle	114,060	116,244	118,265

LOUISIANA

DAILY ALLOWABLE crude-oil production in December has been set at 354,705 bbl. This figure, which was announced by Joseph L. McHugh, conservation commissioner, exceeds the November daily allowable by 7,647 bbl. and is 14,705 bbl. daily above the Bureau of Mines estimate of market demand for Louisiana crude during December.

The Conservation Commission announced, however, that after taking into consideration the estimated underproduction of wells together with portions of the allowable reserved for new wells, the excess over the Bureau of Mines estimated demand would be about 7,000 bbl. daily, or 2.25 per cent.

ADVISABILITY OF GRANTING permits in special cases for dual completions of oil and gas wells and the feasibility of completing in and producing oil from two zones through a single well will be considered by the Louisiana Conservation Commission at a hearing December 2. The hearing will start at 10 a.m. at the Monteleone Hotel, New Orleans, La.

Evidence presented at the hearing is expected to guide the commission in establishing a policy with respect to dual-completion petitions. In addition to other economic aspects, the dual-completion method of operating oil properties now has the support of the Office of Petroleum Coordinator where conditions are such that damage to the reservoir will not result. One of the strongest arguments in favor of dual completions is the savings that may be effected in use of steel.

CALIFORNIA

THE MUCH-DISCUSSED production plan for District 5 went forward to the Office of Petroleum Coordinator at Washington, D. C., early this week and is now under consideration by Coordinator Ickes' staff and probably the Department of Justice. This plan, prepared by a subcommittee, was unanimously approved by the entire committee before going forward and it therefore represents the consensus of California operators. The subcommittee, which prepared the plan, consisted of L. L. Aubert, E. F. Davis, W. C. Whaley, and E. E. Pyles. The latter is chairman of District 5 general production committee and has spent much time, including several trips to Washington, in an effort to formulate a program that would be acceptable and one that could be enforced equitably. Action on this plan may be forthcoming within the next 2 weeks as this should give the coordinator and the Department of Justice ample time to approve the program or recommend changes. If the present plan is approved at Washington, it shall be presented to a meeting of all California operators for their information and guidance. No information has been released on the pertinent points of the plan and nothing will be divulged until acted upon at Washington.

DIRECTOR OF MINERALS . . .

HARRY W. BELL, Shreveport, La., has been appointed director of the minerals division of the Department of Conservation, for the State of Louisiana. Mr. Bell resigned his position as engineer for the Rodessa Field Operators' Committee in Shreveport to accept his appointment. He is a former director of the minerals division, serving when that body had its central office in Shreveport in 1925. Prior to that, he was with the U. S. Bureau of Mines and was at one time associated with Lion Oil Refining Co.

MICHIGAN

ONLY ONE HORIZON of the Reed City field—the Dundee-Monroe—will be developed at this time. Production from the Traverse lime will be sealed off to be recovered at a later date by perforation or plugging back from the lower Dundee. Decision to follow this program of development was reached recently by some of the operators in the pool after consultation with state authorities and the temporary engineering subcommittee of the industry production committee.

Thus, while state authorities apparently supported the plan fully, there was no order enforcing it. In fact, late in November the Oil Advisory Board fixed allowables for the Traverse zone, limited production to the same rate as that set for the Dundee pay, and a program of twin-well drilling was anticipated.

The agreement to seal off the Traverse was commended last week by Wirt Franklin, director of production for District 2 under the Office of Petroleum Coordinator. Mr. Franklin made public a memorandum stating that "This plan of development will save an enormous tonnage of steel and is a real contribution to national defense."

ILLINOIS

THE NEWLY CREATED Illinois division of oil and gas conservation will urge operators to support a "voluntary drilling program" to conserve steel for national-defense purposes, according to an announcement made November 21 by Robert M. Medill, director of the Department of Mines and Minerals, and G. C. (Clem) Curtis, superintendent of the new state control agency.

The announcement was made after Wirt Franklin of Chicago, District 2 senior director for the Office of Petroleum Coordinator, conferred with the state officials.

The OPC, Mr. Franklin declared, will encourage drilling of wildcat wells to discover new reserves. Such wells, he said, will be given priority in Illinois wherever steel is available. Once new fields are discovered, he said, "it is hoped that drilling of wells will be spaced as widely as possible to conserve steel. The wider drilling plan also will apply to pool drilling." Mr. Franklin said the OPC favors the dual-completion method.

KANSAS

HIGHEST ALLOWABLE in the history of Kansas' petroleum industry is assigned in the December proration schedule which provides for recovery of 264,000 bbl. daily, an increase of 7,000 bbl. over the November quota and 3,300 bbl. daily above the Bureau of Mines estimate of crude demand.

The December order allocates 260,700 bbl. daily to wells now on production and 3,300 bbl. of the allowable is reserved for completions during the month.

The December proration schedule was accompanied by a recommendation from Theo A. Morgan, conservation director, that prices of crude oil be advanced 25 cents per barrel.

The OIL AND GAS JOURNAL

PRODUCING REFINING NATURAL GASOLINE PIPE LINE

Published weekly by The Petroleum Publishing Company at Tulsa, Oklahoma

The Matter of Stocks

Colonel Thompson, in returning to his duties as chairman of the Texas Railroad Commission following military service, suggests to the Office of Petroleum Coordinator that production and refinery operations be expanded until 65 million barrels of crude oil are added to inventories and gasoline stocks are increased 20 million barrels above present levels.

This week the Petroleum Economics Division of the Bureau of Mines, in making its December projection of petroleum demands, strongly urges that refiners maintain a high level of operations through the winter and later so there will be sufficient stocks on hand for 1942.

Deputy Coordinator Davies, in replying to Colonel Thompson, said: "Determining the proper function in petroleum inventories has for some time been receiving the serious attention of this office," and promised that recommendations covering this matter will be forthcoming from his office shortly.

In regard to these proposals to increase the inventory burden of the petroleum industry, two observations can be made. First, the increased stocks are not needed so far as normal operating procedure is concerned, and second, large increases in the industry's stocks of crude oil or refinery products have always been accompanied by market weakness.

A reduction in crude-oil stocks in recent years has been the logical result of the application of conservation and proration in producing operations. As reserves increased below the surface the necessity for large stocks aboveground decreased. Crude stocks are now approximately 40 per cent less than during the 1929-1930 peak despite an increase of more than 50 per cent in demand since that time.

This development has not worked a hardship on anyone and the industry has been relieved of the burden of carrying some 200 million barrels of crude oil in tanks. The industry's operations have been so conducted that when extra supplies were needed, instead of opening the valve at a tank, well and field allowables have been increased and the crude oil required has quickly been moved through pipe lines and refineries to consumers.

It is not yet clear why this practice should now be changed so far as the principal operations of the industry are concerned. The fields still have surplus producing capacity and if adequate pipe line and refinery facilities are provided, it would seem that the logical method of providing for the increased civilian and military requirements is to keep the crude safely in the formations, to be withdrawn as needed.

Markets were unsatisfactory last year, with gasoline dropping to the lowest levels since motor fuel became a commercial product. The increase of 53 million barrels in stocks of all oils from the end of January to November 30, 1940, was the reason, the large gain reflecting an unhealthy balance in supply and demand which was general throughout the year. There have been similar situations many times in the past.

A reversal of 1940's operating trend accounts for this year's market improvement. These gains materialized because producers and refiners carried on their operations so that a large part of last year's excess accumulations have been liquidated.

Storage programs at military points will be necessary over the coming year. Those in authority may decide that substantial additions to inventories at refining and consuming centers are desirable during the emergency. In that event the costs should be borne by the Government, with the industry obtaining full protection in seeing that these inventories are handled in such a manner that they do not overhang the industry's markets at a time when operators need every encouragement to do what has to be done.

PRIORITIES.

Answers to a few of the • most pertinent questions asked about procurement • of petroleum equipment

QUESTION: What is the status of the proposal to abandon the preference-rating plan for a system of allocation in the distribution of petroleum equipment?

ANSWER: Formulation of the general allocation program is under way in Washington. A discussion of the developments in this plan is published in this issue and appears on Page 36.

QUESTION: Can you give a brief review of the various orders especially affecting users, suppliers and manufacturers of petroleum equipment?

ANSWER: Among the priorities orders especially affecting critical materials in the petroleum industry are:

Order P-22 (as amended) is a repair order to help in maintaining existing property and equipment without expansion or improvement of facilities in essential industries as listed in the order. As the purpose of this order is only to maintain the existing necessary industries in their present operating status, it is necessary to apply to the Priorities Division for a rating if the present equipment is inadequate and additional equipment is necessary to maintain the defense program. Such application for expansion or new equipment shall be made on PD-1 application forms. P-22 carries inventory restrictions which apply whether or not material was purchased under ratings pursuant to this order.

P-46 is a preference rating order which grants a rating of A-10 to utilities for the maintenance, repair and for operating supplies needed to maintain adequate service. It is much like Preference Rating Order P-22 with the exception that it must be signed and accepted before it can become effective. It is intended by this order to keep existing properties operating with minor additions which are caused by the shifting of the population in old established areas. It does not apply for any expansion of main lines.

M-21 is an order to conserve the supply and direct the distribution of steel, and provides that the customers of the producers shall file a report with each purchase order on Form PD-73, which form shall supply adequate information to the producer of steel in order that he may comply with the order. Order M-21-A, revoking Order M-5 which controlled the distribution of nickel-bearing steel, directs the distribution and controls alloy steel and wrought iron. M-21-B is an order relating to steel warehouses and provides that after Form PD-83-A has been filed according to the provisions of this order, warehouses are given a rating of A-9 for materials based on a quota.

This is another of the special-service series of questions and answers on priorities for the petroleum industry which has been appearing each week since the September 11 issue.

The Oil and Gas Journal has made arrangements to secure authoritative answers to questions arising among operators in all branches of the petroleum and natural-gas industries and manufacturers and suppliers of materials and equipment on preference ratings. Questions are invited and should be addressed to The Oil and Gas Journal, Priorities Question Department, P.O. Box 1260, Tulsa.

QUESTION: Can you advise the approximate reasonable time required to clear PD-1 applications through the Office of Petroleum Coordinator and the Office of Production Management?

ANSWER: There seems to be no definite time element upon which reasonable dependence can be placed. Some emergency applications submitted by telegram have been cleared in a few hours. Less urgent applications have been pending for weeks. The Office of Petroleum Coordinator has advised that the most common cause of delay in clearing PD-1's is the failure of the applicant to give complete information stipulated in the form. Sample forms showing what information is required are available for guidance of operators.

QUESTION: May our scientific laboratory, possessing a blanket A-2 preference rating under Order P-43, extend same to a large associated oil company thereby permitting the latter to resell material bought under Order P-22? Can the oil company be considered as our supplier?

ANSWER: Order P-22 specifically prohibits the reselling of any materials obtained with its help. Thus, while the laboratory has an A-2 rating it cannot be used to obtain supplies from the oil company which the concern has obtained under P-22. It will be necessary for the laboratory to find a new supplier.

QUESTION: Is there a preference-rating position assigned to the marketing branch of the petroleum industry. If not, is such consideration receiving attention from the Office of Production Management?

ANSWER: Preference Rating Order P-22, which extends a limited blanket priority number of A-10 for repair and maintenance materials for the oil industry does not include the Marketing Division. Numerous appeals are now in the hands of OPM's Priorities Division requesting that marketing be assigned a position similar to that of production, refining and transportation. Investigation of the appeals is under way but so far no specific provision for the selling end of the business has been issued.

QUESTION: What is the priority position now held by producers of laboratory equipment?

ANSWER: The Priorities Division of OPM this week broadened the assistance to research laboratories by assigning a preference rating of A-5 to producers of laboratory equipment for the acquisition of the scarce materials required in their manufacturing operations. Producers who supply laboratories engaged in research, testing, analysis and in plant-control studies, are covered by the order No. P-62.

Suppliers Move to Improve Priority Position of Industry

THE newly elected officers and directors and the staff of the Petroleum Equipment Suppliers Association are directing their efforts to aid the petroleum industry in securing the prompt delivery of needed materials.

The immediate objective of the organization is to bring about promptly the promised improvement in the industry's priority position as outlined at a meeting which it sponsored during the A.P.I. meeting in San Francisco early in the month. The association is cooperating with James E. Hughes, priorities specialist, who spoke at the meeting and who outlined plans at that time which, when made effective, will greatly facilitate the movement of supplies from manufacturers and supply companies to operators within the oil industry.

The association will hold a general meeting at Oklahoma City, Okla., in May at semiannual meeting of the American Petroleum Institute.

Earl W. Miller, American Iron & Machine Works, will head the association's activities as president during the coming year. Fred E. Murray, Oil Well Supply Co., is vice president, and Wharton Weems, Houston, Tex., was reelected executive secretary and counsel at the recent annual meeting. Frank Smith, Houston, is assistant to Mr. Weems.

Directors of the association are: Eastern district: George H. Alten, Alten's Foundry & Machine Works; Sam Gregg, Bovaird & Sayfang Manufacturing Co.; Jene Harper, Franklin Tool Co.; O. M. Havekotte, International-Stacey Corp.; Paul H. Jones, S. M. Jones Co.; Donald W. Mackie, Bradford Supply Co.; Fred W. Miner, Frick-Reid Supply Corp.; Jerry McJunkin, McJunkin Supply Co.; A. W. McKinney, National Supply Co.; Fred F. Murray, Oil Well Supply Co.; Casper A. Ruf, Parkersburg Rig & Reel Co., and Fred J. Spang, Spang & Co.

Southwestern district: W. L. Childs, Reed Roller Bit Co.; Ardon B. Judd, Republic Supply Co.; H. W. Fletcher, Hughes Tool Co.; E. W. Gilart, Norvell-Wilder Supply Co.; Allen Guiberson, Guiberson Corp.; Ed L. Lorehn, Cameron Iron Works; W. J. Morris, Continental Supply Co.; W. B. Snarp, Mission Manufacturing Co.; E. M. Smith, Globe Oil Tools; Wallace D. Wilson, Wil-

(Continued on Page 42)

PENBERTHY

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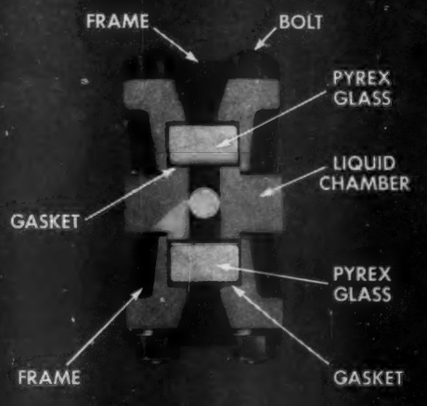

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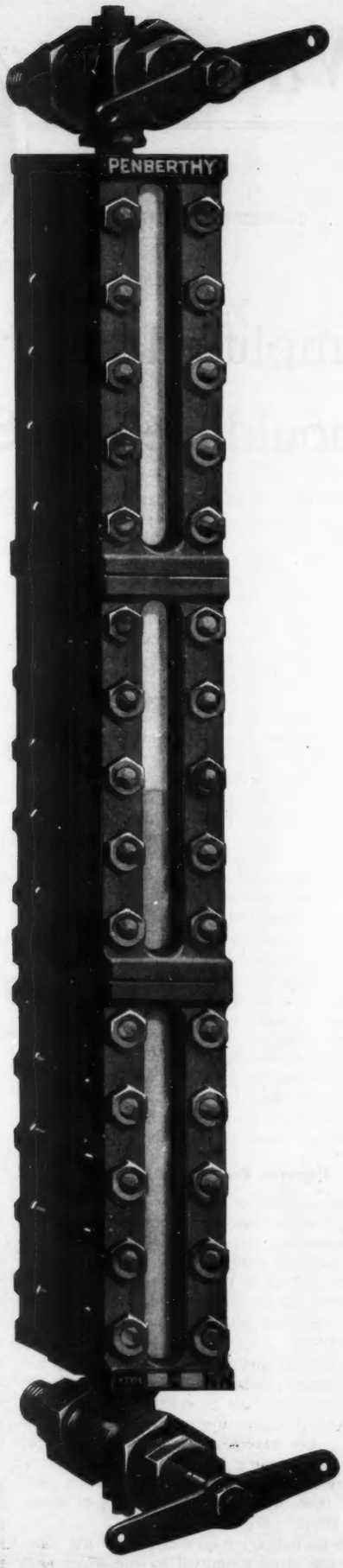

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Watching WASHINGTON

By HENRY D. RALPH

Simplified Priorities Procedure Should Relieve Supply Situation

WASHINGTON, D. C., Nov. 24.—The first step in the changeover from the present confused priorities system to industry allocations is expected to be announced by the Office of Production Management this week. Final details of a program designed to eliminate the current complex preference-ratings situation and to simplify the procedure by which a manufacturer or producer obtains his materials are now being worked out by the Priorities Division.

Under this program, which has been designated the "production-requirements plan," applicants for priorities aid in getting necessary materials to produce for defense or essential civilian uses will be required to fill out a new form disclosing full information with respect to inventories held at the close of the previous quarter, materials consumed during the same period and deliveries of materials to him. Next he will be asked to estimate his materials requirements for the next quarter, and the products which will be produced from the raw materials.

This is expected to give the OPM a complete picture of all raw materials required for the next 3-month period and at the same time disclose exact figures on production expected during the same length of time. With this information, available supplies of raw materials may be rationed with the least waste and the most impartiality. It is hoped that the new plan will eliminate all unnecessarily large inventories and spread all supplies as thinly as possible in order to attain the maximum production for the defense effort.

Replace Preference Rating

Another purpose of the new plan will be to replace the innumerable preference ratings which one manufacturer may have, whereby he may have a rating of A-10 for one material and A-3 for another which is just as vital to his production, with a single industry-wide rating for all materials required to fill defense and essential civilian orders.

While officials admit that it will be months before allocations can be put into full operation, it is hoped to apply the production requirements plan to some industries during the first quarter of 1942. It is not expected that this plan will be used on requirements for the Army and Navy, the Maritime Commission, or the lend-lease program at first, but may be extended to these agencies later.

Reports on military requirements for the coming year are being submitted by the Army and the Navy and the Maritime Commission. Similar reports from lend-lease authorities and export-control agencies are being prepared to show the amounts of materials which will be required for export. These reports are all being broken down in terms of raw materials to give an accurate picture of the tonnages of all materials which will be needed to meet the purely military portion of the program.

After total production of a material is ascertained, military, maritime and lend-lease requirements will be subtracted. It will then be simple to discover how much of this material will be available to meet all of the requirements of the civilian economy. It will remain, then, to determine how much the different industries which consume this material require, and to adjust their production schedules so that the total of their requirements will not exceed the total supply.

This determination will be made upon the basis of studies by the various industry branches within the OPM. Each branch will consult the industry for which it is responsible and every other available source in an effort to learn accurately the quantities of various materials which this industry has used in past years, the amount it would use in the coming year if the available supplies were unlimited, the number of plants in the industry, the number of workers, and so on.

Keyed to Defense Activities

A tentative schedule of requirements will be drawn up on the basis of this study, which would then be keyed to various levels of defense activities. This schedule would then be crosschecked with the other OPM branches and sections having jurisdiction over the needed metals—copper, steel, lead, tin, and the like. These officials will then work out the quantities of materials which this industry may use during the coming year without consuming more than its proportionate share of the available supply.

The schedule will also be studied by the Industrial Conservation Branch of OPM, as well as become the subject of continuing conferences with the industry, to see where savings in materials may be made through simplification of styles and lines, through salvage and reclamation or through any other conservation measures.

The fundamental purpose of the whole program is to permit the national economy to be dealt with as a whole, and to work out each separate industrial program with regard for its place in that economy. Another advantage is that, while the Priorities Division may curtail the output of an industry, say by 50 per cent, it will, where at all possible, guarantee that the industry will receive sufficient materials to attain its curtailed production.

Explaining the urgent need for an allocations system to at least partially replace the priorities system, one high official of the Priorities Division stated that the network of priorities ratings inevitably becomes highly complex when the number of competing demands for materials becomes too great. When this condition occurs, he explained, priority ratings undergo a process similar to the depreciation of currency which takes place in a time of inflation. This country has now reached a point of "priorities inflation," he declared, adding that allocations, or rationing, must be invoked at this time to halt this trend.

Situation on Deduction Tax Remains Unchanged

THE situation with respect to the deduction from income of intangible drilling costs in the case of wells drilled on a footage contract basis, remains unchanged. Strong pressure from congressional sources has been exerted on the Internal Revenue Bureau for a reversal of its "confidential instructions" to its field offices informing them that these costs were not to be permitted as deductions.

In answer to a letter from Sen. Tom Connally, of Texas, urging that these deductions be permitted, Commissioner Guy T. Helvering, after reviewing the decisions of the Board of Tax Appeals upon which the instructions were based, stated that a ruling on the subject "may be expected in the near future." "You may be assured that this entire subject will be given serious consideration by the bureau," he wrote.

However, high officials of the bureau pointed out that it was beyond the province of the Internal Revenue Bureau to issue instructions counter to the decisions of the Board of Tax Appeals. Any such decision, it was said, would have to be made directly by the Secretary of the Treasury, and this would not be any permanent solution as the question would keep recurring in future decisions.

Legislation repealing the particular provision of the internal revenue laws applicable, would be the only permanent solution, it was said.

While no such legislation has been introduced in Congress as yet, an administrative tax bill is scheduled for action shortly after the first of the year, and revision of the offending portion of the statute could easily be accomplished at that time. However, the industry, and members of Congress from oil-producing states, are wary of attempts by the Treasury to force a cut in the present 27½ per cent depletion allowance if the oil question is brought up in connection with a tax bill. Secretary of the Treasury Henry Morgenthau, in his latest appearance before a congressional committee, strongly urged that the depletion allowance be reduced. Present Treasury proposals are for a reduction to 15 per cent.

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Oil Men Asked for Suggestions On Container Standardization

WASHINGTON, D. C., Nov. 24.—The petroleum industry was called upon today to make definite recommendations on conservation and standardization of containers for petroleum products in an effort to eliminate as much as possible the use of metal drums and other metal containers.

Meeting with representatives of the Office of the Petroleum Coordinator and the Office of Production Management, the chairman of the five regional marketing committees were informed by Joseph Taylor, chief consultant of metal containers of the OPM, that while 144,000 tons of steel has been allotted to drum manufacturers for the first quarter of 1942, it may be impossible to obtain this amount under the rating that will be given.

He pointed out that wood barrels were used almost universally 20 years ago for packaging petroleum products, and added that he could see no reason why the industry could not return to wood containers. It will be only a matter of time, Mr. Taylor said, before drum manufacturers are unable to meet the over-all business needs for steel drums. The major need for substitution of other than metal containers for the metal ones now in use, he explained, is because an increasing amount of sheet-steel production is being converted into plate production to make strips for cartridge containers and for other defense purposes.

During the afternoon session, Elmer Baltzell, of the legal staff of the OPC, discussed the various aspects of the provisions of the revenue laws on amortization over a 5-year period of storage and other plant facilities. Mr. Baltzell also pointed out that General Preference Order P-22 providing priorities for repair, maintenance, and operating materials does not apply to retailers, and it was decided to appoint a national survey committee to study marketing needs, and inventories of available equipment not now in use. This committee is to be made up of three representatives from each region including an oil-company-equipment expert, a jobber representative, and a representative of pump manufacturers.

High Refinery Operations Predicted by December Crude-Demand Forecast

WASHINGTON, D. C., Nov. 24.—Desirability of continuing refinery operations at the current high level during the winter was emphasized last week when the Bureau of Mines issued its monthly forecast of crude-oil demand for December.

The bureau forecast the December market demand for domestic crude oil at 128,310,000 bbl., or 4,139,000 bbl. daily, an increase of 69,000 bbl. over the November estimate and 576,000 bbl. greater than the actual demand in December 1940.

Exports of crude during December were calculated by the Bureau of Mines at 2,500,000 bbl., compared with actual shipments abroad of 2,074,000 bbl. in the same month a year ago.

The estimated demand for domestic crude oil next month was based on requirements for 52,200,000 bbl. of motor fuel, an increase of 12.5 per cent over the actual demand last December.

Demand from Texas was estimated at 1,479,700 bbl. daily, an increase of 25,000 bbl. over the November forecast. A rise of 18,400 bbl. in the daily demand from Illinois, 7,200 bbl. daily from Kansas and 9,100 bbl. in California were the principal upward revisions for December compared to November. The Bureau of Mines' estimate for Oklahoma was lowered to 460,000 bbl. daily in December, 9,400 bbl. below the November forecast. Estimated daily average crude demand by states follows:

States—	December	November
Texas	1,479,700	1,454,700
California	635,800	626,700
Oklahoma	460,000	469,400
Illinois	426,500	408,100
Louisiana	340,000	333,200
Kansas	260,700	253,500
New Mexico	116,100	115,200
Wyoming	81,900	83,400
Arkansas	76,500	76,500
Mississippi	60,300	55,100
Michigan	52,300	47,400
Pennsylvania	47,300	45,500
Montana	20,700	20,600
Indiana	19,700	20,500
New York	14,800	14,500
Kentucky	13,600	14,300
West Virginia	11,800	11,000
Ohio	9,400	9,000
Nebraska	6,100	6,200
Colorado	5,800	5,200
Total	4,139,000	4,070,000

Bring Pressure for Immediate Increase in Crude Price; Congressmen Form Bloc

WASHINGTON, D. C., Nov. 24.—Strong congressional pressure for an immediate increase in the price of crude oil is being brought to bear on Price Administrator Leon Henderson. Formation of a bloc of congressmen from eight oil-producing states, to force an increase, came as the House began consideration of the administration's price-control bill.

This bloc, led by Rep. Albert Thomas, Houston, Tex., and containing approximately 20 congressmen, began a drive for an increase in prices which has been requested by both independents and major companies. They assured Mr. Thomas that they would call on the price administrator either today or tomorrow with a vigorous protest against present ceilings on crude.

Mr. Henderson, in a conservation with Representative Thomas today maintained his stand that no increases should be permitted pending the completion of studies by his staff on production costs. However, these studies are not expected to be completed for some months and the oil bloc pointed out that labor and other costs are steadily rising in the meantime.

Thompson Urges Ickes' Aid In Increasing Crude Prices; Accompanied by Oil Men

WASHINGTON, D. C., Nov. 25.—Col. Ernest Thompson, of the Texas Railroad Commission, and a group of oil men representing the South Texas Chamber of Commerce, met with Petroleum Coordinator Harold L. Ickes today to urge his aid in obtaining an immediate increase in crude-oil prices.

The group told Mr. Ickes that three important angles with respect to oil should be closely watched at the present time, as follows:

"1. Marginal oil wells must be kept in production so as to get the greatest ultimate recovery.

"2. New discoveries of oil must be made in order to build up disappearing reserves.

"3. The removal of price differentials and the bringing of crude-oil prices up to parity will achieve largely both of these most desirable results. We earnestly solicit your continuous support in these objectives."

Colonel Thompson stated that Mr. Ickes received the suggestions of the oil men "with sympathy," and had given "encouragement" that the requests for higher crude prices will be met.

GULF ENTERTAINS SUPERINTENDENTS AND FOREMEN

The Tulsa division of the Gulf companies entertained superintendents and foremen of the production department of Gulf Oil Corp., Gypsy division, and Gulf Refining Co., eastern production division, at the Mayo Hotel in Tulsa, November 14. The banquet was attended by Rush Greenslade, vice president in charge of the Tulsa division; P. H. Bohart, vice president and assistant manager, Tulsa division; other representatives of the Tulsa office, and superintendents and foremen from all over the territory of the Tulsa division, which includes New Mexico, Kansas, Oklahoma, Michigan, Indiana, Illinois, and Kentucky. Following the banquet, Mr. Greenslade honored the company's softball team, which was awarded the 1941 Softball Sportmanship Trophy for exhibiting the best sportsmanship of the 55 teams participating in games through organized leagues under the supervision of the recreation department of the city of Tulsa.

International

Dutch West Indies . .

Quota of Oil Exports to U. S. at Half Tax Is Filled

EXPORTS from the Netherlands West Indies to the United States in October filled the assigned quota under the Venezuela trade agreement by which import taxes are halved. Imports from the West Indies and from Mexico which filled its quota earlier in the year will bear the full impost of 21 cents per barrel through November and December. The West Indies' quota was 13,781,100 bbl. and the Mexican, 3,299,485 bbl.

Venezuela's quota of 45,548,800 bbl. was expected to be filled in November as 38,273,760 bbl. had been imported up to October 31, leaving a balance of only 7,275,040 bbl. for the final 2 months of the year. All but 57,333 bbl. of Colombia's quota of 2,070,400 bbl. had been filled.

Mexico . .

Sharp Advance Registered In Pemex Crude Production

CRUDE-OIL production from properties under management of Petroleos Mexicanos, the Mexican Government's petroleum agency, climbed to 111,805 bbl. daily in October, the highest output registered by the bureau since June, and is 18,351 bbl. per day more than reported by Pemex in September.

The current rate of production is, however, substantially lower than for the same period last year. Petroleos Mexicanos reported daily average production of 129,454 bbl. in October 1940 and for September last year the rate of output was 118,293 bbl. daily.

October production from three of the four main producing districts was higher than in September. The most substantial increase was in the South Tampico region where last month's output was more than double the rate of a year ago and about 7,065 bbl. daily above the average for September.

October production from Poza Rica increased 246,935 bbl. compared to September and North Tampico output was up 103,750 bbl. for the month. Production details follow, but do not include from 4,500 to 5,000 bbl. daily produced by independent companies and private operators:

PETROLEOS MEXICANOS PRODUCTION

(Figures in barrels)

	September		October	
Area—	1940	1941	1940	1941
North Tampico	393,485	366,120	421,870	469,870
South Tampico	323,495	363,190	259,320	582,190
Poza Rica	2,521,025	1,714,440	2,848,295	1,961,375
Isthmus region	429,075	453,310	483,600	452,520
Total	3,667,080	2,897,060	4,013,085	3,465,955
Daily average	118,293	93,454	129,454	111,805

FINAL figures show crude-oil production in Mexico during September totaled 2,965,115 bbl., an average of 98,837 bbl. daily compared with 99,348 bbl. in August and against 127,759 bbl. daily for September 1940.

Another substantial decline of nearly 54,000 bbl. for the month was reported from the Poza Rica field.

Petroleos Mexicanos, the Mexican Government petroleum agency, produced 2,834,830 bbl. of the September total, a daily average of 94,494 bbl., and the remainder came from properties still operated by independent companies.

The following table shows the Mexican oil production for August and September this year and for September 1940:

	Sept.	Aug.	Sept.
District—	1940	1941	1941
North Tampico	533,430	440,075	420,085
South Tampico	349,466	382,410	380,847
Poza Rica	2,520,824	1,764,370	1,710,874
Isthmus region	429,041	492,925	453,309
Total	3,832,761	3,079,780	2,965,115
Daily average	127,759	99,348	98,837

Brazil . .

Seven Tankers Ordered Into National Operation

REQUISITIONING of all seven tankers under the Brazilian flag to transport fuel oil and motor fuel from other countries has been authorized by Pres. Getulio Vargas in an order to the government-owned Brazilian Lloyd Steamship Co. These boats have a combined carrying capacity of approximately 280,000 bbl. Together with foreign tankers recently returned to Latin American service, they assure Brazil of an ample supply of oil products.

At the same time it was announced that a plan to trade a 23,900-ton Italian liner, seized in a confiscation of Axis boats, to the United States for tankers is under consideration.

Argentina . .

Production for 9 Months Increases 6.8 Per Cent

ARGENTINA'S crude-oil production rose 6.8 per cent in the first 9 months of this year when it totaled 16,179,805 bbl. against 15,147,825 bbl. in the like 1940 period, an increase of 1,031,980 bbl. Production of state-owned properties rose from 9,006,295 bbl. in the 1940 period to 10,270,545 bbl. in 1941 while that of privately owned properties declined from 6,141,530 bbl. to 5,909,260 bbl.

The Comodoro Rivadavia fields continued as the country's principal source of crude oil with a production of 11,584,825 bbl. The Mendoza area ranked second with 2,421,710 bbl., the Salta area third with 1,378,885 bbl., and remainder came from Plaza Huincul.

Guatemala . .

Petroleum Consumption Shows Substantial Gain

ESTIMATED consumption of petroleum products in Guatemala during the second quarter of this year increased to 258,127 bbl., a gain of 33,329 bbl. compared to the first 3 months. Consumption of aviation gasoline during the second quarter was almost double that of the first 3 months. A substantial increase in requirements for diesel oil, asphalt, and road oil and in tractor fuel also was reported. The breakdown of figures on estimated consumption is shown in the following table:

(Figures in United States barrels of 42 gal.)

	First quarter	Second quarter
Product—	1941	1941
Aviation gasoline	2,461	4,623
Motor gasoline	32,808	31,358
Tractor fuel	3,149	4,101
Kerosene	1,664	
Lubricants	1,829	1,979
Fuel oil	119,403	109,691
Diesel oil	63,252	89,550
Asphalt and road oil	232	16,825
Total	224,798	258,127

Bolivia . .

Program for Development Of Bolivian Oil Supported

ARGENTINA'S shortage of petroleum products may be relieved to some extent when plans for her sharing in the development and exploitation of Bolivian fields become effective. In view of the seriousness of the shortage, Argentina is expected to move rapidly toward completion of such plans.

Collaboration between the two countries in the development of Bolivian fields has been agreed upon for some time. Argentina's principal role would be to provide capital but would also include the construction of a railroad from that country to Santa Cruz de la Sierra, Bolivia's "oil capital."

Ratification of the Argentine-Bolivian agreement is expected to be undertaken by the Argentine Government. Such ratification would normally be required of the legislature which, however, is not now in session.

Venezuela . .

Standard and Lago Lower Production and Exports

COMBINED daily average production and the total exports of Standard Oil Co. of Venezuela and Lago Petroleum Corp. declined sharply in July from June. The daily average production of the two companies in July was 290,089 bbl. against 323,304 bbl. in June, a decline of 33,215 bbl. The bulk of the decline was in the Lake Maracaibo fields of Lago Petroleum Corp. while the companies increased their eastern Venezuela production slightly.

Field—	S.O.V.	Lago	Total
Lake	7,045	181,439	188,484
Other western fields	4,746		4,746
Eastern Venezuela	90,306	6,553	96,859
July total	102,097	187,992	290,089
June total	101,038	222,271	323,304
Difference	+1,064	—34,279	—33,215

Exports of the companies dropped almost 600,000 bbl., the largest decline being in those of Lago. A summary of exports of the two companies follows:

Month—	S.O.V.	Lago.	Total
July	2,799,683	5,736,129	8,535,812
June	2,980,296	6,140,965	9,121,261
Difference	—180,613	—404,836	—585,449

PERCO

CATALYTIC DESULFURIZATION

REDUCES

TETRAETHYL LEAD REQUIREMENTS

• Perco Catalytic Desulfurization provides substantially complete removal of deleterious sulfur compounds.* The desulfurized stocks show greatly improved Tetraethyl Lead susceptibility as well as other advantages incidental to products of low sulfur content.

• The commercial units now in operation on various types of products are all making it possible for the refiner to meet octane requirements with considerable savings in Tetraethyl Lead.

* It is to be remembered that Perco Catalytic Desulfurization not only removes so-called mercaptan sulfur, but many other deleterious sulfur compounds as well.

• All inquiries regarding Perco Catalytic Desulfurization should be addressed to

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PERCO DIVISION

OF

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BARTLESVILLE, OKLAHOMA

Producer of Interstate Goods Must Observe Wage-Hour Act

The employer who either knows or has reason to believe the goods he produces will move in interstate commerce must comply with the provisions of the Fair Labor Standards Act in the production of such goods even though the goods are all sold by the producer within the state of production.

This contention of the Wage and Hour Division, U. S. Department of Labor, was upheld by Judge Fred M. Raymond in U. S. District Court at Grand Rapids, Mich., in a decision granting the division an injunction enjoining the Rex Oil & Gas Co., of Muskegon, Mich., from further violations.

In his conclusion Judge Raymond said: "Notwithstanding the fact that defendant sold within the State of Michigan all of the oil which it produced, its employes were, during the period in question, engaged in the production of goods for interstate commerce within the meaning of the Fair Labor Standards Act because at the time said oil was produced defendant knew or had reason to believe that substantial portions of said oil and products refined therefrom would move in interstate commerce."

Another contention of the division was upheld by Judge Raymond in the same case when he ruled that oil pumpers and roustabouts, if subject to the minimum wage and overtime provisions of the law at all, must be paid for all hours spent on a job when required or expected to be on or near the premises, whether actually performing manual duties or not.

On this point Judge Raymond concluded: "For the purpose of determining overtime compensation due to oil pumpers of defendant in accordance with the act, there should be included as hours worked by such pumpers not only the hours that such pumpers were actually engaged in manual labor, but also such hours as they were charged by the terms of the understanding between them and the defendant, with substantial responsibility for the successful operations of the pumps under their charge; and including also the periods during which they were obliged to remain on or near the premises to enable them to carry such responsibility properly."

King Oil Contracts to Sell To Phillips Operated Unit

Properties of the King Oil Co., Amarillo, Tex., were involved in a stock sale last week in which the Pan Oil Co., a Delaware corporation, of which John A. Bell, Jr., Pittsburgh, Pa., is president, offered to purchase stock at a price quoted in the press as somewhere between $11.50 and $11.80 per share. Purchase of all outstanding stock would involve a total of around $7,500,000.

King Oil Co. holdings comprise approximately 1,800 acres in Gray and Hutchinson counties, all either producing or in proven areas, and other properties in North Texas. The company owns outright or has a substantial interest in about 700 producing oil wells with a total daily allowable of 3,300 bbl.

The sale, as announced by R. A. King, president of the King company, was completed by negotiation of a contract in which he and certain other stockholders are to sell their stock. Mr. King said he was sending a copy of the sale contract to all other stockholders to give them the opportunity to accept the same terms. The Pan concern in turn is proposing to enter into a contract with the Phillips Petroleum Co. to operate the properties, and it was understood a district operating office will be established in Wichita Falls, Tex.

The King Oil Co., of which Mr. King is president and largest stockholder, was formed in 1936 by a consolidation of the Dixon Creek Oil & Refining Co. and the King Royalty Co. The Dixon Creek company had been formed by a consolidation of the Dixon Creek Oil Co. and the Cockrell-McIlroy Oil Co. some time previous. These last two companies were organized by S. D. McIlroy and White McIlroy.

Officers of the King company, besides Mr. King, are Royden K. Marsh, Denver, Colo., vice president; Edmund Simmons, Denver, Colo., secretary and treasurer; A. R. King, Wichita Falls, assistant secretary and treasurer; J. C. Reynolds, Wichita Falls, assistant secretary and treasurer, and Jessie Poyner, Wichita Falls, assistant secretary.

DEATHS

JAMES SCOTT THOMPSON, 72, an oil man for more than 50 years, died last week in a Tulsa hospital following an illness of 2 months. Mr. Thompson came to Tulsa in 1905 and entered the pipe-line business. He was with the Cosden, Gypsy and Gulf Pipe Line Co. before his retirement 3 years ago when his health failed.

R. B. SGORT, 56, general manager, Ray Stephens, Inc., Oklahoma City, Okla., died at his desk Monday. Death was attributed to acute indigestion. His wife and two sons survive.

JOSEPH DRURY, 44, Pennsylvania oil and gas man, died recently from injuries suffered in an automobile accident. Death came while Mr. Drury was in a hospital in West Branch, Mich. He was returning from a hunting trip when the accident occurred. He leaves his widow, two daughters and a son.

THE MARKETS*

CRUDE OIL: Pressure is being applied from numerous quarters on the Office of Price Administration at Washington, D. C., in an effort to set aside the limitations imposed by Leon Henderson, the administrator. Meanwhile, purchasers are actively soliciting new connections in numerous producing areas, offering all inducements short of price advances in deference to OPA's regulations.

REFINERY PRODUCTS: Tank-car markets in most parts of the country are steady. Fuel oils have been reduced fractionally in the New York territory and California gasoline quotations are soft. Gulf Coast refiners are virtually sold up for remainder of the year and are being called upon to supply increasing quantities of material for lend-lease requirements.

TANK WAGON AND POSTED DEALER: A few soft spots in the Middle West motor-fuel market made their appearance last week. Lower prices were reported at several points along the Mississippi River and other inland waterways.

FINANCIAL: Oil stocks traded over a narrow range last week, closing slightly higher than in the previous 7-day period. Average of 30 representative stocks for the week ended November 22: High, 26.97; low, 26.18; close, 26.77. Week ended November 15: High, 26.98; low, 26.14; close, 26.50.

*Detailed information in the market section.

EXECUTIVE COMMITTEE, PETROLEUM SECTION, NATIONAL SAFETY COUNCIL

The officers elected at the recent annual meeting of the Petroleum Section during the National Safety Congress in Chicago are shown at a breakfast meeting. From left to right around the table are the following: A. J. Gorand, Atlantic division chairman, Sun Oil Co., Marcus Hook, Pa.; J. L. Risinger, chairman industrial data-sheet committee, Socony-Vacuum Oil Co., Inc., New York, N. Y.; Crymes Pittman, chairman engineering committee, United Gas Pipe Line Co., Shreveport, La.; Eugene Swanson, New England division chairman, Colonial Beacon Oil Co., Everett, Mass.; J. J. Reilly, vice chairman for marketing, Tide Water Associated Oil Co., Boston, Mass.; J. B. Harris, Arkansas Natural Gas Corp., Shreveport, La.; H. T. Markee, vice chairman for production, Phillips Petroleum Co., Bartlesville, Okla.; F. R. McLean, general chairman, manager safety and insurance department, White Star division, Socony-Vacuum Oil Co., Inc., Detroit, Mich.; J. Howard Myers, vice chairman for manufacturing, director safety and fire prevention, Atlantic Refining Co., Philadelphia, Pa.; Alexis de Tarnowsky, Great Lakes division chairman, Pure Oil Co., Chicago; H. N. Blakeslee, secretary, American Petroleum Institute, New York, N. Y.; J. L. Manes, vice chairman for pipe lines, Sun Oil Co., Dallas, Tex.; Thomas F. Brown, Gulf division chairman, Gulf Oil Corp., Houston, Tex.; C. L. Barrett, Mid-Continent division chairman, Gulf Oil Corp., Tulsa; R. S. Huffman, publicity committee chairman, Oklahoma Natural Gas Co., Tulsa. Three other members of the executive committee are not in the picture: F. M. Russell, visual-education committee chairman, Standard Oil Co. of California, San Francisco, Calif.; W. E. Lovejoy, Pacific Coast division chairman, Standard Oil Co. of California, San Francisco, Calif., and Dr. V. M. Brian, health committee chairman, Texas Co., Lawrenceville, Ill.

P. F. Murray, Oil Well Supply Co., Dallas, Tex., and Earl W. Miller, American Iron & Machine Works, Oklahoma City, Okla., who were elected vice president and president, respectively, of the Petroleum Equipment Suppliers Association, at the association's recent meeting in San Francisco

Suppliers' Move to Improve Priority Position of Industry

(Continued from Page 34)

son Supply Co.; Frank Hereford, Murray-Brooks Hardware Co., and George O'Leary, Houston Oil Field Material Co.

Pacific district: J. C. Axelson, Axelson Manufacturing Co.; Markley C. Brown, Hillman-Kelly, Inc.; J. A. Crawford, Youngstown Steel Products Co. of California; E. S. Dulin, Byron Jackson Co.; D. S. Faulkner, National Supply Co. of California; H. H. Glen, Emsco Derrick & Equipment Co.; H. E. Howard, Howard Supply Co.; L. H. Keim, Oil Well Supply Co.; Rodney S. Durkee, Lane-Wells Co.; Roy Somers, Petroleum Equipment Co.; Ted Sutter, Baker Oil Tools, Inc., and T. H. Beament, Republic Supply Co. of California.

Mid-Continent and Rocky Mountain: W. M. Bovaird, Bovaird Supply Co.; J. R. Brooks, Atlas Supply Co.; Frank J. Hinderliter, Hinderliter Tool Co.; John J. Larkin, Larkin Packer Co.; Earl W. Miller, American Iron & Machine Works; A. A. Moody, Jarecki Manufacturing Co.; Walter O'Bannon, Walter O'Bannon Co.; J. L. Shakely, Frick-Reid Supply Co.; Guy A. Thompson, Bethlehem Supply Co.; Jay P. Walker, National Tank Co., and Carl White, Jr., Franks Manufacturing Corp.

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Demand in 1942 to Establish New Record for Industry

(Continued from Page 30)

Lubricating Oils

Both domestic and export demand for lubricating oils should rise next year. Demand for lubricating oils is divided between the automotive and industrial fields and, over a period of years, the two will be approximately equal. However, the greater increase in industrial production lifted requirements in this field to a point more than 15 per cent greater than the automotive demand this year.

Exports of lubricating oils are expected to rise under the stimulus of extended lend-lease buying. The increase, according to present expectations, will partially offset the loss of European markets and return the total to approximately that of 1940. Total demand for lubricating oil is estimated at 44,300,000 bbl., up 4,200,000 bbl. or 9.4 per cent from 1941.

In view of the probability of further increases in demand in 1942, there may be some question of the industry's ability to meet it. Such doubts would be increased when the difficulty in obtaining materials for expansion of capacity is considered.

At present there is definitely no prospect of a shortage either in raw materials or refining capacity. The only difficulty is in supplying the rapidly increasing demand for 100-octane aviation fuel, a demand that hardly could have been foreseen. So far as the purely domestic consumers are concerned, their demands will be met in full. It is entirely possible that increased domestic and military demands combined with aid to the anti-dictator nations will tax the industry's present refining capacity in some sections, but internal readjustments that loom large in themselves, but which actually would be small in an industry as vast and complex as oil, could meet every possible contingency that may arise in 1942.

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Increased Exploration Required By Declining Discovery Rate

(Continued from Page 27)

shortage of oil but the short-range view is not so favorable. One element which contributes greatly to the present unsatisfactory outlook is the fact that our discovery rate is far below what it should be. To reverse the trend will require the drilling of at least as many wells as during the past few years, if not considerably more.

Reserves and Years' Supply

In addition to presenting this estimate of proven reserves in terms of barrels of oil, it is also given in terms of years' supply at the rate of the preceding year's production. Any student of reserve data will immediately agree that it would be impossible to produce this oil in this number of years. If today we have 14 years' supply of oil in the ground, some of this oil could not possibly be produced for 50 years. The history of many fields indicates that a very large percentage of the oil may be produced during the first few years, but that as the field goes on the pump, production may continue at a steadily declining rate for decades. In fact, no major field has yet been abandoned.

The purpose of appraising reserves in terms of years' supply is to provide two definite yardsticks. In the first place, if the number of years' supply declines, that indicates that we are not finding enough new oil to meet requirements. In the second place, if the number of years' supply in reserve exceeds a certain figure, there is an excess of flush production and the industry may become unsettled as a result of a surplus of easily recoverable low-cost production. And, conversely, if the supply in terms of years' supply falls below a certain figure, there is a deficiency in the supply of oil which may be brought to the surface and this scarcity, which may be only temporary, may cause a rapid rise in prices which may be unhealthy.

Our experience over the past 20 years suggests that when the number of years' supply of proven reserves exceeds 15, the potential surplus may unsettle the market for crude or for refined products or both. If the number of years' supply is less than 11, there is danger of a shortage of crude. It is, therefore, assumed that the optimum reserve is approximately 13 times present annual production.

Requirements of New Oil

Frequently, the amount of new oil discovered is balanced against withdrawals. If there is an excess, it is assumed that the discovery rate is satisfactory. If there is a deficiency, more discoveries are needed. Actually, this method of evaluating discovery rates does not take into consideration the trend of demand. The demand for oil has increased almost every year since the early days of the industry. If when production was 500,000,000 bbl. per year we had had 15 years' supply in reserve, and if we had found new reserves to balance withdrawals every year on the average, the consequent present reserve of 7,500,000,000 bbl. would be pitifully inadequate to supply an annual demand of 1,500,000,000 bbl.

If during a year of declining demand the discovery rate remains stationary, the net result is an increase in terms of years' supply and the saving through lowered demand is as important so far as present demand is concerned as the same quantity of new oil.

Table 2 shows the annual discovery requirements since 1935 together with the amount of new oil actually added during those years. As final data are not available, the new oil found in 1941 is not included, but there is excellent reason for believing that new oil found during 1941 will not equal the 1940 discoveries.

Table 2 shows that on the basis of 11 years' supply, i.e., the region of scarcity, the industry entered 1935 with a backlog of 2,242,856,000 bbl. of excess reserves. This figure did not change greatly during the next 3 years, but in 1938 declining output coupled with a normal discovery rate increased this backlog by nearly 100 per cent and a similar increase was registered in 1939 by reason of an increase in demand which was below normal and an abnormally large discovery rate. The year 1940 saw a decline in this backlog and indications are that it will drop about as much in 1941, or to about 4,500,000 bbl. Despite the anticipated drop, we are a long way from scarcity of immediately available oil, although another large increase in demand would materially lower this safety factor.

Based on what is considered to be the optimum reserve, namely 13 years' supply, the picture is somewhat different. The industry entered 1935 with a small surplus of only 436,648,000 bbl. and this was reduced to a small deficiency by 1937. However, in 1938 declining production and high discovery rates raised the excess above optimum reserves to more than a full year's supply and in 1938 this excess was more than doubled. In 1940 the excess declined nearly 20 per cent and this year there may be a further reduction of about one-quarter of the balance. Unless discoveries increase in 1942 a further increase in demand may bring the industry well below the optimum.

The condition of overabundance, if it is agreed that 15 years' supply may be so regarded, was not reached until 1939 and by the end of 1940 this danger had been almost completely removed.

Conclusion

The quantity of oil added to proven and prospective reserves during the past 2 years through the discovery of new fields is insufficient for our immediate need for flush production. With the steady increase in demand for oil, we are dependent on more intense development of old fields with the result that our backlog there is being rapidly depleted. The falling discovery rate has reduced our reserves from a condition of superabundance to the point where our optimum rate of production may be passed, although we are not yet in danger of a shortage provided demand does not increase too rapidly. An active exploration program is essential if the oil industry is to remain ready to meet all requirements as successfully as it has done in the past.

Refinery Expansion

Curtailment in Chlorine and Lead Consumption Held Inevitable

WASHINGTON, D. C., Nov. 25.—Warning that the situation with respect to supplies of chlorine and lead is so critical that curtailment of the use of these two materials in the production of tetraethyl lead by one-third might be necessary, was sounded today by E. T. McCormick, deputy supervisor of civilian allocation of OPM. Mr. McCormick's statement was made at a meeting of chairmen of the five regional marketing committees, refining committee representatives and the Office of the Petroleum Coordinator.

Irwin Vogelsang, chief of OPM's lead branch, told the meeting that defense requirements for lead are increasing daily. In a recent month, he said, Army and Navy requirements alone were 47,000 tons, while total available supply amounted to about 70,000 tons and total demand was 110,000 tons.

The situation with respect to chlorine supplies is such that a cut in civilian consumption necessarily must be made, P. Welch, representing the OPM chemical section, declared. Stating that the OPM is not in a position to make a horizontal cut in consumption without first consulting with the petroleum industry, Mr. Welch requested an estimate of the maximum cut which the industry could take without major dislocations. He also predicted that chlorine would be placed under a complete allocation system by January 1, 1942.

Representing the Ethyl Gasoline Corp., Dr. Graham Edgar disputed the contention of OPM that his company is a consumer of chlorine. He stated that under present operations producing at the rate of 150,000,000 lb. of tetraethyl lead annually, the Ethyl Gasoline Corp. produces 3 tons more chlorine per day than it consumes. By spring, he said, the entire tetraethyl lead industry would be producing more chlorine than it consumes.

J. McCauley, representing the Chrysler Corp., stated that a reduction in octane number from 75 to 70 would result in a loss of 10 per cent in efficiency of operation of automobiles. He said that 85 per cent of cars now being driven require 74-octane gasoline.

Pointing out that 50 per cent of all tetraethyl lead produced is now going into the defense effort, Wright W. Gary, OPC director of refining, declared that there is a practical limit beyond which tetraethyl lead production cannot be reduced without resulting in the production of non-commercial gasoline for civilian use.

Warning that many independent refineries are wholly dependent upon tetraethyl lead for production of their high-octane fuels, B. L. Majewski, chairman of the marketing committee for District 2, declared that any horizontal cut in deliveries of tetraethyl lead might have the effect of forcing these independents out of business.

Contract Awarded for Fluid Catalytic Plant on East Coast

Contract for the construction of a new fluid catalytic cracking plant at the Standard Oil Co. of New Jersey refinery at Bayway, N. J., costing about $4,000,000 has been awarded to Foster Wheeler Corp. Construction on the plant will start in the near future.

The new unit at Bayway will be the third fluid catalytic cracking plant built by the Standard organization. One such plant is now under construction at Standard Oil Co. of Louisiana's Baton Rouge, La., refinery and another is being built by Humble Oil & Refining Co. at Baytown, Tex.

High-preference rating for materials needed in the plant has been arranged which will permit completion of the plant in about 9 months. The fluid catalytic cracking process was developed by Standard Oil Development Co. and arrangements for licensing the process are worked out with Universal Oil Products Co. and M. W. Kellogg Co.

Construction on the Bayway unit was scheduled to have started earlier this year but delays in arranging for required materials prevented an earlier start.

Texas Refineries Operating At 88.4 Per Cent of Capacity

Texas petroleum refineries are operating at 88.4 per cent of their capacity, it was reported last week by the Railroad Commission in announcing results of a survey made prior to the proration hearing to consider December allowable.

The compilation showed a capacity of Texas refineries to handle 1,430,120 bbl. of crude oil daily.

East Central Texas and the Gulf Coast area were operating at the highest refinery ratio, each 92 per cent capacity. Refinery operation in East Texas was 62 per cent. Lowest was 17 per cent in District 7-C, a part of West Central Texas.

The total capacity of 1,430,120 bbl. daily indicates an increase of nearly 30,000 bbl. since the middle of the year.

Natural Gas

Oklahoma Gas Company Drops Rate-Increase Petition

The Oklahoma Natural Gas Co. has abandoned its appeal from a Corporation Commission order declining to permit the company to put its statewide rates in effect in cities where it acquired gas service by purchase of properties of Central States Light & Power Co.

The company had contended its rates should go into effect in the 21 state cities formerly served by Central States but the commission held that the acquisition of Central States' property did not automatically give the company the right to change rates for any city.

Permit Issued for Carbon-Black Project in Hugoton Gas Field

Permit to utilize natural gas from the Hugoton field in western Kansas for the manufacture of carbon black was issued last week by the Kansas Corporation Commission to Glenn M. Dunne, Wichita, Kans., vice president of the Dunne-Israel Co., and C. W. Hoffman, Eastland, Tex., official of the Huber Carbon Black Co.

It was announced at the time that a $300,000 carbon-black plant will be built near the town of Hugoton and a drilling and development program will be undertaken soon after January 1 in Townships 34-37w and 33-38w, close to Hugoton. Innes Harris, attorney representing the new enterprise, said that 20 wells in the field which have no pipe-line connections at present will be purchased.

Construction of the plant will provide a market for gas from an area where large numbers of land and lease owners have been unable to find a connection for their output. It is also expected to relieve the problem of drainage of gas from adjoining leases which has caused some difficulty in times past.

Natural-Gas Revenues Show Gain in Industrial Use

Revenues of the natural-gas industry for the first 8 months of 1941 aggregated $355,258,400, a gain of 5.3 per cent over a year ago, according to the monthly summary of gas-company statistics released last week by the American Gas Association. Revenues from industrial uses increased 19.2 per cent, while revenues from domestic uses decreased 1.0 per cent.

Recycling News

Contract Awarded for Katy Recycling Plant

Contract for the construction of Humble Oil & Refining Co. recycling plant in the Katy field, Waller County, Texas, has been awarded to the Stearns-Rogers Manufacturing Co. of Denver, Colo.

The plant will cost approximately $3,000,000 and is designed to process 200,000,000 cu. ft. of gas daily and will make in excess of 5,000 bbl. of products per day. The plant will be located on a 40-acre tract about 4 miles northwest of the town of Katy, and construction is to be started immediately.

In addition to the Humble company, 11 other operators in the field have worked out a unitizing producing program. These companies are Atlantic Refining Co., Darby Petroleum Corp., Lion Oil & Refining Co., Magnolia Petroleum Co., Sinclair Prairie Oil Co., Stanolind Oil & Gas Co., Sun Oil Co., Tide Water Associated Oil Co., Amerada Petroleum Corp., Ohio Oil Co., and the Union Producing Co. The first eight companies named above have a joint interest with Humble in the new plant which Humble Oil & Refining Co. will operate.

Natural Gasoline

Supreme Court to Hear Oral Arguments on Rate Case

The U. S. Supreme Court has ordered oral argument on December 8 to determine whether Texas should be granted permission to institute proceedings before the tribunal seeking to have upheld a rate order fixing at 32 cents per 1,000 cu. ft. the price at which the Lone Star Gas Co. can sell gas for consumption in 270 Texas cities and towns. The Lone Star company was granted permission to intervene in the litigation.

The controversy grew out of conflicting opinions by the Texas Supreme Court and the state Court of Appeals over the meaning of a U. S. Supreme Court decision on the litigation.

PROGRAMS AND MEETINGS

Tax Committees of Mid-Continent Oil and Gas Association to Convene

The standing tax committees of the Mid-Continent Oil and Gas Association will hold their seventh annual joint meeting at the Blackstone Hotel, Fort Worth, Tex., December 4, 5, and 6.

The meeting will open with a joint general session on Thursday morning, December 4, at which time the gathering will be addressed by several prominent industry executives on various subjects bearing on the oil industry's tax problems. Included in the speakers at this session are Judge J. C. Hunter, Abilene, Tex., president of the general Mid-Continent Oil and Gas Association, and Gerald Gordon, secretary, Associated Industries of Kansas, Topeka, Kans.

John Hammermann, Jr., Gulf Oil Corp., Houston, Tex., who is general chairman of the association's standing committee on state and local taxation, has announced that on Thursday afternoon, December 4, public officials of several of the southwestern oil states will address the members of that committee on matters pertaining particularly to the administration of the state taxes in so far as they affect petroleum-industry operations. The session of this committee on Friday morning, December 5, will be given over to reports by the various steering committee chairmen, and a discussion of ad valorem-tax problems in the various states.

Excise taxation will be the subject for discussion at a group session on Friday afternoon, December 5. This session will be devoted particularly to a discussion of new provisions in the laws, court decisions, and administrative rulings and regulations affecting the administration of the various excise, sales, and use tax laws. Tax representatives who are well qualified to discuss the subjects will address the session.

H. F. See, Atlantic Refining Co., Dallas, Tex., who is general chairman of the standing committee on federal income and excise taxation, has announced that one of the high lights of the meeting will be a symposium on the federal excess profits tax. Several of the oil-company tax representatives are preparing discussions for presentation during the symposium.

On Saturday morning, December 6, a symposium on the proposed internal revenue administrative code will be held. This session will particularly deal with the changes in administrative procedure that would be brought about by the proposed code.

West Central Texas Group To Meet in January

The annual meeting of the West Central Texas Oil and Gas Association will be held shortly after the middle of January, according to W. J. Rhodes, Breckenridge, president of the organization.

Determination of the exact date and the place for the session will be made by the executive committee of the association at a conference the first week of December, Mr. Rhodes said.

Change to January for the time of the annual meeting of the regional petroleum service association is a departure from the practice followed the past 4 years. The gatherings have been during early December since 1937.

P.E.P.A. Meeting Expected To Attract 200 Visitors

One of the high points of the thirteenth annual conference of the Petroleum Electric Power Association when it meets December 4 and 5 at the Baker Hotel in Dallas, Tex., will be a talk by A. N. Horne, general manager, Empire Pipe Line Co., Bartlesville, Okla., speaking on the subject of "Pipe Lines and the National Defense."

The meeting, expected to attract more than 200 sales engineers and other executives from utility electric-power companies from New York to Corpus Christi, Tex., is scheduled for a full 2 days' discussion of timely important topics concerning utility electric power and the petroleum industry.

In addition to Mr. Horne's paper, talks during the first-day sessions will include those of Dave Levey and E. A. Koenig, Magnolia Pipe Line Co., Dallas; K. R. Albert, Louis Allis Co., Dallas; C. G. Unlaub, Electric Machinery Co., Dallas; all speaking on "Variable Speed Couplings and Variable Capacity Pumps"; H. C. Gear, Lone Star Gas Co., Dallas, will bring "A Message From the Petroleum Industry Electric Association"; Robert Haldane, Shell Oil Co., Inc., Dallas, will speak on "Changes in Refinery Electric and Steam Requirements Resulting From the Manufacture of Synthetic Rubber and Explosives," and Don Knowlton, Phillips Petroleum Co., Bartlesville, Okla., on "The Future of Oil Production Viewed From the Standpoint of Present-Day Production Methods."

Papers the second day will include those of B. J. Martin, publisher, Electrified Industry, Chicago, speaking on "New Uses of Electric Service"; G. R. Prout, manager, industrial control department, General Electric Co., Schenectady, N. Y., on "Supplying Defense Needs," and E. A. Armstrong, Public Service Co. of Northern Illinois, Chicago, will tell "How Electric Utilities Have Met the Demand for Power."

Petroleum Industries Association Elects

The Petroleum Industries Association held its first fall meeting at Alice, Tex., last week and elected new officers for the coming year. George I. Noble, Jr., Houston, district manager of Priorities Division of the OPM, gave an informative talk about the program of the OPM in relation to supplying equipment for the oil industry. R. L. Puerifory, dean of engineering, of the Texas A. & M. College, was elected president of the association; J. A. Huff, of the Huff Engineering Service, was elected first vice president. Other officers elected were Ed Breedlove of Black, Sivalls & Bryson; Frank Dotterwich, Texas A. & I. College; J. W. Rockwell, Axelson Manufacturing Co., and Tex Brammer, Seaboard Oil Co., secretary and treasurer.

W.P.R.A. Will Meet In New Orleans, La.

The board of directors of the Western Petroleum Refiners Association has selected New Orleans, La., for the thirtieth annual meeting of the association, to be held March 23, 24, and 25, 1942. The meetings will be held at the St. Charles Hotel.

John C. Day, secretary of the association, says that plans for the general and technical sessions are being prepared, and more detailed announcements will be made at a later date.

CALENDAR

December

EXPOSITION OF CHEMICAL INDUSTRIES, eighth annual meeting, Grand Central Palace, New York, December 1-6.

NEW MEXICO OIL AND GAS ASSOCIATION, Artesia, N. M., December 3.

AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS, Southeastern district meeting, New Orleans, La., December 3-5.

PETROLEUM ELECTRIC POWER ASSOCIATION, Dallas, Tex., December 4-5.

MID-CONTINENT OIL AND GAS ASSOCIATION, Standing Tax Committees, seventh annual meeting, Blackstone Hotel, Dallas, Tex., December 4-6.

OKLAHOMA STRIPPER WELL ASSOCIATION, Tulsa, December 5.

SOUTH DAKOTA INDEPENDENT OIL MEN'S ASSOCIATION, twenty-third annual convention, Aberdeen Civic Auditorium, Aberdeen, S. D., December 11.

January

SOCIETY OF AUTOMOTIVE ENGINEERS, annual meeting and engineering display, Book Cadillac Hotel, Detroit, Mich., January 12-16.

February

AMERICAN PETROLEUM INSTITUTE, Division of Production, southwestern district, spring meeting, Adolphus Hotel, Dallas, Tex., February 26-27.

NORTH TEXAS OIL AND GAS ASSOCIATION, Wichita Falls, Tex., February 28.

March

INDIANA INDEPENDENT PETROLEUM ASSOCIATION, spring convention and refiners and suppliers exhibit, Hotel Severin, Indianapolis, Ind., March 3-5.

WISCONSIN PETROLEUM ASSOCIATION, annual convention and equipment show, Schroeder Hotel, Milwaukee, Wis., March 18-20.

WESTERN PETROLEUM REFINERS ASSOCIATION, thirtieth annual meeting, New Orleans, La., St. Charles Hotel, March 23-25.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, spring meeting, Houston, Tex., March 23-25.

April

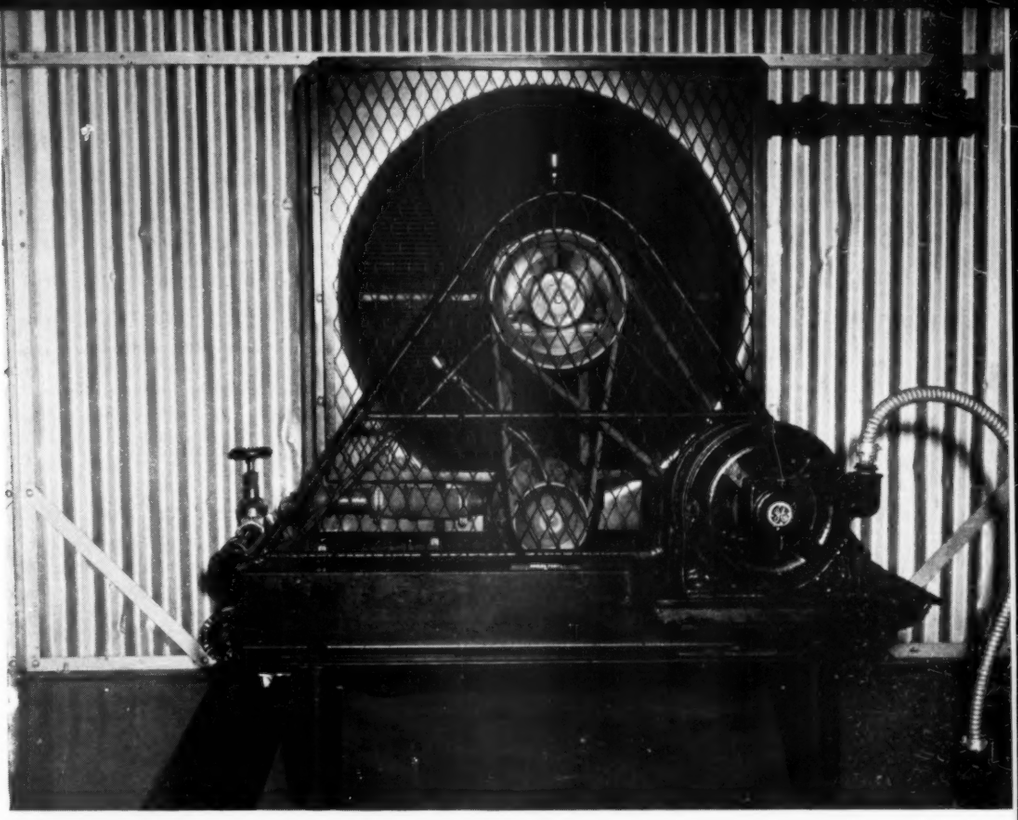
AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, Cincinnati, Ohio, April 15-17.

NATIONAL PETROLEUM ASSOCIATION, thirty-ninth semiannual meeting, Cleveland, Ohio, April 16-17, 1942.

SOUTHWESTERN GAS-MEASUREMENT SHORT COURSE, Norman, Okla., April 21-23.

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, twenty-seventh annual meeting, Cosmopolitan Hotel, Denver, Colo., April 21-24.

PETROLEUM INDUSTRY ELECTRICAL ASSOCIATION, Washington-Youree Hotel, Shreveport, La., April 22-24.



Water cooling on a small repressure project is as important as on larger ones if engine and compressor trouble is to be avoided. The accompanying photograph shows a neat installation which includes a radiator with the fan and water pump being driven by an individual electric motor

ENGINEERING & OPERATION

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A review of the results of studies dealing with the problem of excessive heats on casing which have caused carburization.

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Practical Application of Flow Valve Installation Principles

By JAMES E. HALFERTY
Petroleum Engineer

THE flow valve is an item of considerable importance to the oil industry, yet, paradoxically it is one of the most misused pieces of production equipment. To design, manufacture, and properly install a good flow valve requires considerable experience and ability. On the other hand, it is fairly simple to make a "jigger" at low cost which will be cataloged as a flow valve and have enough successful installations to confuse the issue of proper flow-valve manufacture. The appearance on the market of inferior equipment, together with frequent overselling and misapplication, has greatly retarded the standardization of flow-valve manufacture and installation principles.

Mention of these difficulties is not made solely as criticism, but to recognize growing pains typical of any rapid expansion such as gas lift has had in recent years. Inferior flow valves will gradually eliminate themselves as performance records pile up. As for overselling, this is an evil not confined to the gas-lift branch of the industry and from which the operator will be better able to protect himself as his knowledge and experience with gas lift grows. Regarding proper application, it is the purpose of this article, to present with examples and illustrations some of the basic principles concerned with a successful flow-valve installation, rather than to discuss the theoretical side of gas lift.

The principles set forth herein, are naturally not all original with the author but are rather a summary of results and conclusions from the study of many successful and unsuccessful flow-valve installations. These ideas are not meant to take issue or open controversy with the ideas and experiences of others, but merely to present some of the fundamentals of flow-valve operation as already proved, and possibly to enable the reader to make a successful installation or to remedy the faults of any unsuccessful installation he may now have.

Gas lift is a prodigious and complex subject in its entirety. In this article only tubing-string flow-valve operations proper will be considered, including open and semiopen installations. These are primarily installed in wells just past the free-flowing stage because of insufficient gas energy or due to water encroachment, and operate, either with the well's natural casing pressure or with an outside supply of high-pressure gas. These wells still retain an appreciable reservoir pressure but need enough additional energy to supply that which has been dissipated below the critical point necessary to flow the well under the existing conditions.

Closed installations, subpackers, wire line, and the many other types of gas-lift methods designed to operate a well in its last stages of normal primary recovery are a separate chapter in the gas-lift story and are not included in this report.

Considerations

The first consideration of a successful flow-valve installation is to obtain (if this has not already been done) certain pertinent information concerning the physical characteristics of the well. This information includes:

Mr. Halferty graduated from Carnegie Institute of Technology in civil engineering in 1934, and upon graduation went to work for Gulf Oil Corp. in Crane, Tex. After 3 years of experience as roustabout, roughneck, general apprentice engineering and land, leasing and scouting experience, he moved to Odessa, Tex., as district production engineer, which post he recently resigned to become associated with Bryan Gas Lift Equipment Co. as chief engineer, with headquarters in Los Angeles, Calif. During his service as district engineer, Mr. Halferty had charge of the engineering departmental work, both production and petroleum.

1. Depth of fluid level in tubing at maximum buildup and zero tubing pressure.

2. Static fluid gradient, or weight of fluid column per foot.

3. Bottom-hole pressure in pounds per square inch.

4. Productivity index in barrels per day per pound of bottom-hole pressure drop.

5. Natural shut-in casing pressure.

6. Per cent water well makes.

7. Degree of corrosiveness of well fluid.

The above data are considered essential. Naturally any additional information about the well's behavior such as flowing casing pressure, gas-oil ratio, etc., will contribute to the general picture and perhaps lend practical temperance to theoretical principles. Data for Considerations 1, 2, and 3 are all obtained at the same time by lowering a recording subsurface-pressure gage down the tubing and making periodic stops. These tests are taken at maximum buildup, preferably with the tubing open. Pressure readings at various test depths are plotted as shown in Fig. 1.

Consideration 4 is necessarily a flowing test, in which the drop in bottom-hole pressure from maximum static to a settled flowing rate is measured and divided into the settled production rate in barrels per day. This gives the productivity index in barrels per day per pound bottom-hole pressure drop. If this information has not already been obtained during the flowing life of the well, it might possibly be obtained by swabbing well in and kicking it off, with pressures taken on subsequent flowing period. Or, the productivity index can be estimated in some fields by comparing rate of bottom-hole pressure build up and original well potential with similar data from wells whose productivity index is already known.

Well Conditions Determine Spacing

After the static and flowing characteristics of the well have been recorded, the type of flow valves, number, spacing and submergence must then be determined. Supplementing the written matter, an example of a typical flow valve installation in a high-fluid-level well (see Fig. 1)

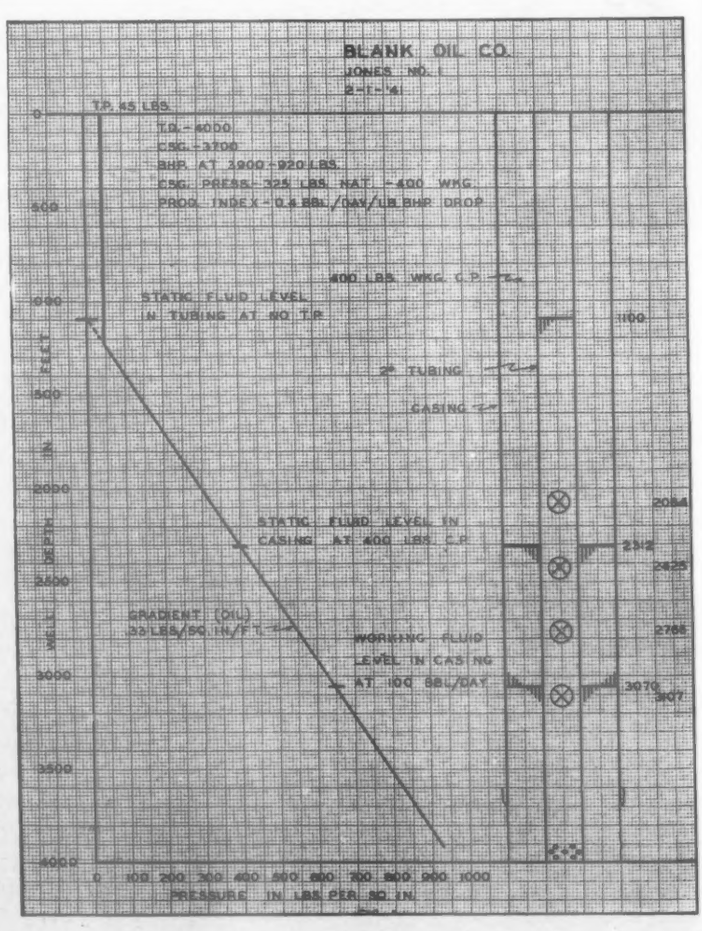
BLANK OIL CO.
JONES NO. 1
2-1-'41
T.P. 45 LBS.
T.D. - 4000
CSG. - 3700
BHP AT 3900 - 920 LBS.
CSG. PRESS. 325 LBS. NAT. - 400 WKG.
PROD. INDEX - 0.6 BBL./DAY/LB. BHP DROP
400 LBS. WKG. C.P.
STATIC FLUID LEVEL IN TUBING AT NO T.P.
2" TUBING
CASING
STATIC FLUID LEVEL IN CASING AT 400 LBS. C.P.
GRADIENT (OIL) .35 LBS./SQ. IN./FT.
WORKING FLUID LEVEL IN CASING AT 100 BBL./DAY
2054
2314
2425
2785
3070
3107
0 100 200 300 400 500 600 700 800 900 1000
PRESSURE IN LBS. PER SQ. IN.

Fig. 1

is carried along in the discussion with numerical calculations illustrating each of the various considerations of the complete installation. Well conditions are assumed to be as follows:

Blank Oil Co. 1 Jones	
Total depth, ft.	4,200
5½-in. casing, ft.	3,700
Test data—February 1, 1941	
1. Depth fluid level at no tubing pressure, ft.	1,100
2. Static fluid gradient, lb./sq. in./ft.	0.33
3. Bottom-hole pressure at 3,900 ft., lb./sq. in.	920
4. Productivity index, bbl./day/lb. b.hp. drop	0.4
5. Natural maximum closed-in casing pressure, lb./sq. in.	325
Available gas supply pressure, lb./sq. in.	400
6. Water percentage	none
7. Moderate corrosiveness.	

Type of Valve

The first step in a proper installation is to determine the type of flow valve and its operating conditions including opening and closing pressures and gas volume passage, commonly called the valve "setting." There are a number of acceptable makes of flow valves on the market, and the manufacturer will furnish a variety of settings on request. One of the factors which tends to make flow-valve selection confusing to most operators is this wide variety of settings and the claim for each. It is one of the purposes of this article to try to show that the majority of cases requiring flow valves can be handled with a minimum of different valve settings.

Exclusive of wire-line and other surface-controlled gas-lift equipment, there are fundamentally two different types of tubing flow valves on the market; (1) the differentially operated, spring-loaded type; and, (2) the diaphragm operated type. As the former is the more commonly used, it will be the type discussed.

Since many articles have already been written on the make and operation of flow valves, a brief description of the differential-spring type should suffice. Briefly described, this type of flow valve is, in effect, a controlled perforated collar with a spring-loaded valve so designed that when the weight above the valve due to a fluid or gas load in the tubing reaches a definite amount *less* than the amount of the casing pressure (hence the term differential) the valve will open, pass a predetermined volume of gas, and close when the pressure in the tubing has dropped to another set amount less than the casing pressure.

Spring-loaded, differentially operated flow valves can be further broken down into two types; the single seated and double seated. The single seated is the most common type, and, as the name implies, has only one valve seat so placed as to shut casing gas off from the tubing when the tubing pressure is below that necessary to open the valve. This type of valve is naturally open when casing and tubing pressures are equal or when the tubing pressure is higher than the amount necessary to hold the valve open.

The double-seated valve seats in both directions and gas cannot therefore be passed from the tubing into the casing with this type of valve. This valve is always closed on the lower seat under conditions of equilibrium (usually requires 10 lb. differential casing pressure to overcome spring tension holding valve shut on this seat) and closes on the upper seat under normal operating conditions. This valve has two obvious advantages over the single-seated valve, (1) it will not allow well fluid to fill the annulus above packer in a closed installation since the lower seat provides a nonreturn feature, and (2) it has less tendency to stand open due to interference caused by fluid friction (discussed later) when flowing from the lower valves.

The 125-lb. differential reopening pressure and 150-lb. blowdown-close valve mentioned in this article is the double-seated type. Because of the advantages mentioned above, this single-valve setting can be run throughout the entire flow-valve string and still operate either as unloading or intermitting valves.

When a long string of single-seated valves are run, it is usually advisable to run at least two different valve settings, the top valves set as "kickoff" or unloading valves, and the bottom valve or valves set to operate as intermitting type valves.

There are many different settings which can be used for an unloading valve, of which 50-lb. differential reopening pressure, 150-lb. differential blowdown-closing pressure is one. In selecting a valve to be used for unloading, it is necessary to have a low-differential reopening pressure to assure that this valve will remain closed when the well is flowing from lower valves. It is also necessary that the differential blowdown-closing pressure is not too high, otherwise the valve might never shut off. Kickoff valves make up that part of the installation above the working-fluid level and only operate when the well is first opened up and fluid buildup in the tubing is at a maximum.

It is desirable to have intermitting-type flow valves below the working fluid level. In some cases this will mean only the bottom valve of the set. By "intermitting" is meant valve operation at recurrent or periodic intervals dependent on the well fluid input and frequency with which the well fluid rises to a height above the valve necessary to reopen it. In the single-seated type, 125-lb. differential reopening pressure, 85-lb. blowdown close and 190,000 cu. ft. gas are typical.

To further illustrate flow-valve action, a valve set to operate at 125-lb. *differential* reopening pressure, 150-lb. *differential* blowdown-closing pressure, and 150,000 cu. ft. maximum gas-passage rate would have the following behavior in a well whose operating casing pressure is 400 lb.: Assuming the valve had operated and closed, it would remain closed until the fluid level had risen again in the tubing high enough above the valve to create the 125-lb. differential pressure across the face of the valve (Fig. 2). In this case, when the pressure exerted on the tubing side of the valve due to the weight of fluid above the valve was 400 lb.—125 or 275 lb. the valve would open, blow gas into the tubing until the pressure in the tubing had dropped to 250 lb. (150 lb. less than the casing pressure), and then shut again.

Experience has shown that the 125-lb. RC-150-lb. BDC spring-loaded double-seated type valve with 150,000-cu. ft. maximum gas volume is very satisfactory in handling high fluid level wells. Where appreciable water is present, it is expedient to step up the gas volume to 175,000 cu. ft. or more for reasons discussed later. Naturally there are numberous other settings on wells of this type, many of which are working satisfactorily. However, the 125-150-lb., 150,000-cut. ft. setting has been arrived at after several years of experimenting with and installing a wide variety of settings and is probably as near a satisfactory wide range standard setting as any yet designed at this stage of gas-lift development. There is no desire on the part of the author to question other settings being used, or indeed to claim that this one will operate satisfactorily under all conditions. The purpose is merely to present to the reader one setting that has proved very satisfactory over a wide range of conditions where a tubing string equipped with flow valves is desired.

In low-fluid-level or low-productivity-index wells where a semiclosed installation is necessary, a valve with a lower closing differential and higher volume is often used. A typical successful setting is 125-lb. differential reopening and 85-lb. differential blowdown close with 215,000-cu. ft. gas volume. This is more of an intermitting type of flow valve and is especially adaptable for use deep in the well to intermittently handle the feed-in of a low-potential well. The volume is increased to give more of a slug action and to handle the additional friction incidental to flowing from lower in the tubing string.

Submergence

Having selected the type and setting of the flow valve to be used, the second factor of importance is to determine the position in the tubing string of the top valve, i.e., its submergence under the maximum static fluid level. The submergence of the top valve has long been a controversial point in making flow-valve installations. Review of a few fundamental principles coupled with practical experience should help to clarify this topic considerably.

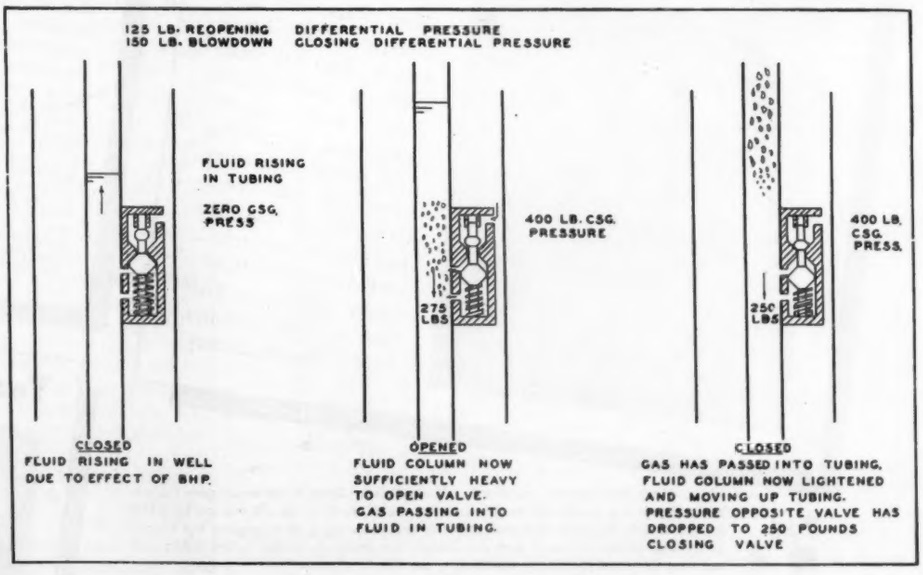
125 LB. REOPENING DIFFERENTIAL PRESSURE
150 LB. BLOWDOWN CLOSING DIFFERENTIAL PRESSURE
FLUID RISING IN TUBING
ZERO CSG. PRESS
400 LB. CSG. PRESSURE
400 LB. CSG. PRESS.
275 LBS
250 LBS
CLOSED
FLUID RISING IN WELL DUE TO EFFECT OF BHP.
OPENED
FLUID COLUMN NOW SUFFICIENTLY HEAVY TO OPEN VALVE. GAS PASSING INTO FLUID IN TUBING.
CLOSED
GAS HAS PASSED INTO TUBING. FLUID COLUMN NOW LIGHTENED AND MOVING UP TUBING. PRESSURE OPPOSITE VALVE HAS DROPPED TO 250 POUNDS CLOSING VALVE

Fig. 2

Remembering that we are considering in this article only open installations (no packer), or packer installations in which there is no standing valve above the perforations (semiclosed), the top valve need not be spaced higher in the hole than a depth necessary to assure that enough tubing fluid weight will be available to reopen the valve at static maximum buildup. This is a point which is often overlooked in open installa-

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COMPTON, CALIFORNIA

Mid-Continent Distributor: HAKE TOOL COMPANY, Houston, Texas · Rocky Mountain Representative: MOUNTAIN SALES AND SERVICE CO., Casper, Wyoming · Foreign: GEORGE R. WOODS, 17 Battery Place, New York City

tions and the usual tendency is to set the top valve too high. Obviously, however, if the valve is designed to reopen at 125 lb. differential or with a 275-lb. fluid load where the casing pressure is 400 lb. as given in the example (Fig. 1), then the valve must be set at least a sufficient distance under the static fluid-level to assure 275-lb. fluid load on the valve at maximum conditions in order to reopen it. If the fluid in tubing is a 0.33-lb. per sq. in./ft. oil column this will mean an 834-ft. column of oil, and if the depth of maximum static fluid column is 1,100 ft., there is no purpose in installing the top valve above a depth of 1,934 ft., with a casing pressure of 400 lb.

How much deeper to go is largely a matter of experience. In general, it is safe to go 150 ft. deeper than the depth necessary to reopen the top valve where the fluid is oil, and 75 ft. deeper where the fluid is water. This would place our top valve (Fig. 1) at 1,100 ft. + 834 ft. + 150 ft. or 2,084 ft. from top. In some wells, even greater submergences are satisfactory.

However, it is highly important to remember that as the submergence increases below the point of load necessary to reopen the valve, the differential between casing and tubing pressures is becoming less and consequently the volume through the valve will be less than test volume (taken at maximum differential). This decreasing volume would soon reach a value too small to aerate the fluid column a sufficient amount to cause flow.

Volume

If the valve is set too deep, the volume of gas which the valve will pass might be too small to move the fluid load above it, although the valve itself will open, pass gas and close as before. The gas will bubble up through the fluid but will break out of the fluid at the top and pass out of the well bringing very little or no fluid.

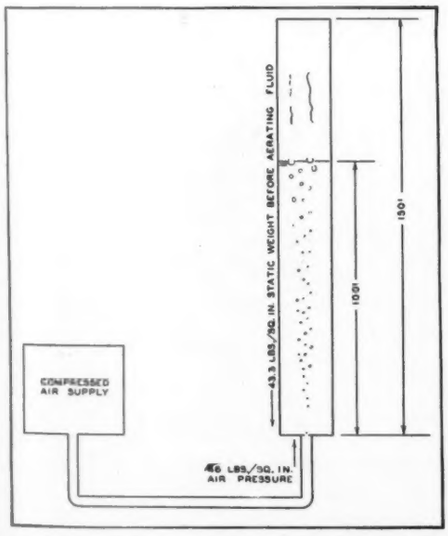


Fig. 3—Showing effect of insufficient starting velocity

This situation can be easily illustrated by visualizing a 2-in. glass tube 150 ft. high filled with water to a height of 100 ft. and the bottom connected to a supply of compressed air (Fig. 3). Since the water exerts a pressure on the bottom of the column of 43.3 lb. per sq. in., compressed air released into this column at any pressure in excess of this amount would bubble up through the water. It can be easily realized, however, that if air at 46-lb. pressure, for example, were released through a restricted orifice into the column, that although the air would pass on up and out at the top, it would not have sufficient volume or velocity to lighten the water column and flow water out the top. As the differential pressure, across the orifice, and hence the volume and velocity were increased, a point would be reached where the column was sufficiently lightened that fluid flow would result.

The technical term for this phenomenon as applied to gas-lift practice is "starting velocity," and is of considerable importance in arriving at the volume which a valve must pass. The starting velocity can be obtained from velocity curves which have been calculated mathematically for various sizes of tubing, showing the velocity resulting from injection of different gas or air volumes at varying load pressures. In applying the velocity charts it should be well to remember that they do not attempt to correct for many unknown variables such as flowing friction, amount of entrained gas naturally in the well fluid, compressibility factor, deviation from natural-gas laws, etc. At best their use can only supplement field experience. In this respect it has been found that a velocity less than 5 ft. per second for oil and 8 ft. per second for water is getting into the danger zone where "drowning out" might result.

Occasionally a well will build up a high casing pressure and still not flow due to drowning effect of water and insufficient reservoir gas. Under this condition, with a differential valve of 125 lb. less than the casing pressure, it would take 800 lb. — 125 lb. or 675 lb. of fluid to reopen the valve, using 800 lb. casing pressure as an example. Obviously if a volume of 150,000 cu. ft. for oil or 175,000 cu. ft. for water is sufficient for normal operating pressures, the starting velocity using this same volume against a 675-lb. load would be much too small. Here again, experience plus the velocity curves, shows that increasing the volume to 235,000 cu. ft. would in most cases handle this condition.

Spacing

Having selected the type of flow valve and the submergence of the top valve, the next important determination is the length of spacing between flow valves.

The essential fact to remember is, the spacing of flow valves in a tubing string is dependent on the reopening differential pressure of the valve. Using a 125-lb. reopening valve in a well making no water (Fig. 1) the maximum spacing would be 125 ÷ 0.33 or 378 ft. However, it is wise to allow 10 per cent to take care of future loss of valve spring tension, which in this case would reduce the safe maximum spacing to 340 ft. Since the most commonly used 2-in., Range 2 tubing is approximately 31 ft. in length, a practical spacing would be 11 singles or 341 ft.

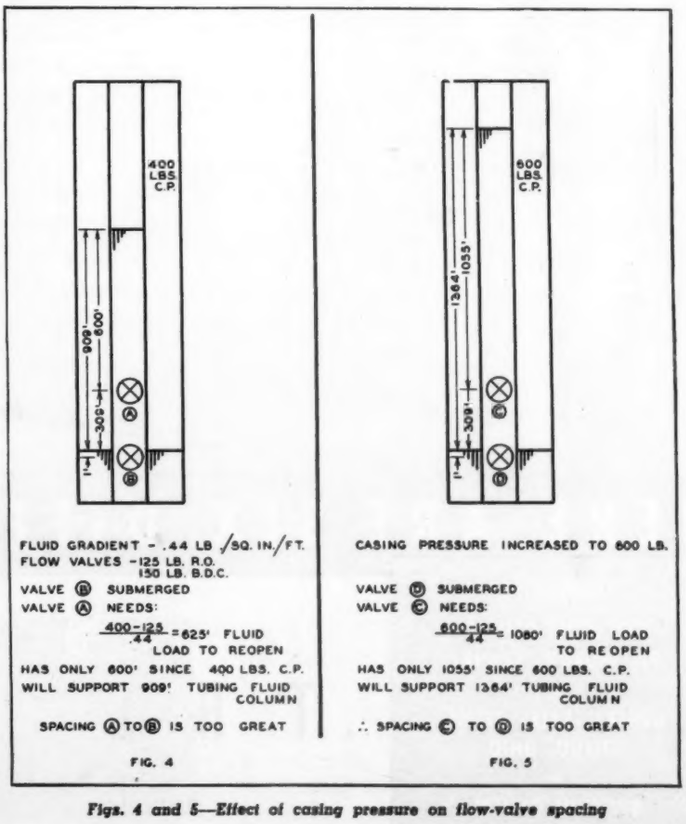
If the well makes water, even in small percentages, it is almost always necessary to space the valves to handle the maximum weight expected, which for water would be about 0.44 per sq. in. per ft. gradient. Using our differential reopening pressure of 125-lb. divided by 0.44, and less 10 per cent, we fond the maximum spacing is now 256 ft. Eight singles at 31 ft. would give a practical spacing of 248 ft. The reason it is necessary to space valves for water even though the well makes only a small percentage, is that should a slug of water enter the tubing in sufficient quantity to change the weight between flow valves from the critical for that particular spacing, a "stymied" condition might result. This has proven true in actual experience in many instances.

To exemplify the above situation and at the same time show that an increase in casing pressure will not help a stymied condition where a differentially operated spring-loaded flow valve is used, the following simple illustration is used:

Assume 125-lb. reopening valve, 0.44 lb. per sq. in. per ft. gradient and a spacing of 310 ft. Casing pressure is 400 lb. and is increased to 600 lb. to try to overcome the stymied condition. A simple calculation shows that a casing pressure of 400 lb. will support a tubing column of 0.44 gradient weight fluid 909 ft. (Fig. 4). Assume condition when working fluid level in casing has been lowered to a point 1 ft. above valve *B*. This valve, even though it has reopened due to sufficient load above it, cannot pass gas into the tubing column because it is submerged below the casing fluid level. Therefore the tubing flow must be started by valve *A*. But it takes 400 lb. — 125 lb. = 275 lb. or 625 ft. of fluid to reopen valve *A*, and since Fig. 4 shows that there is only 909 ft. — 309 ft. or 600 ft. of fluid on valve *A* (only 264 lb.), the valve will not reopen.

Increasing the casing pressure will not eliminate this condition. From Fig. 5 we see that 600-lb. casing pressure will now support a 1,364-ft. fluid column of 0.44 lb. per sq. in. per ft. gradient in the tubing. However, the load necessary to reopen the valves has also increased and is now

(Continued on Page 64)



Figs. 4 and 5—Effect of casing pressure on flow-valve spacing

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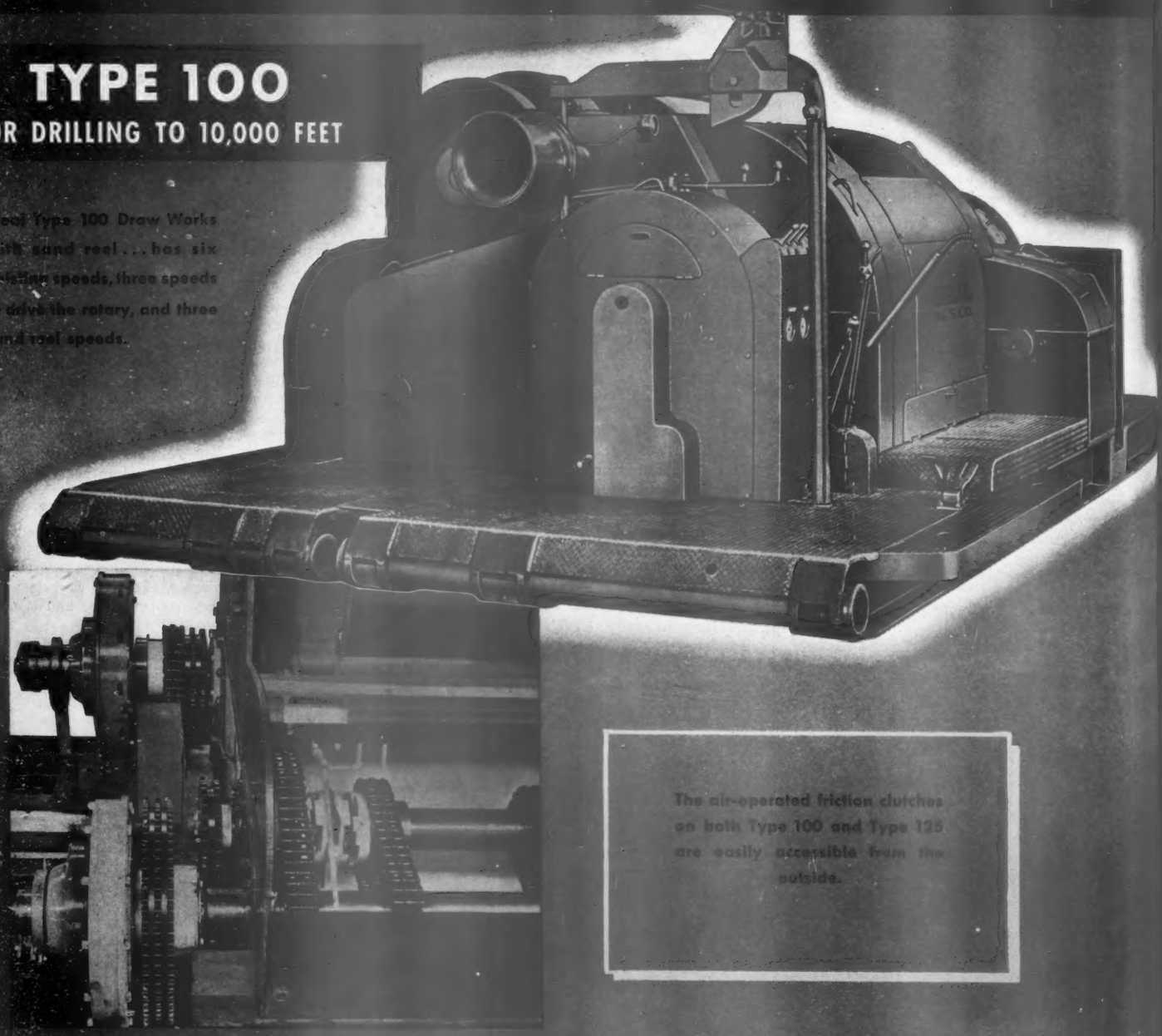

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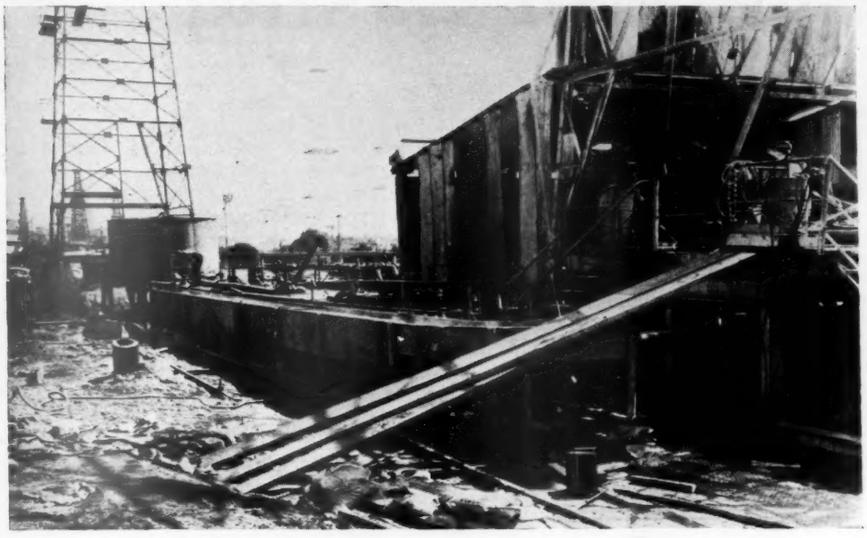
Operating Ideas

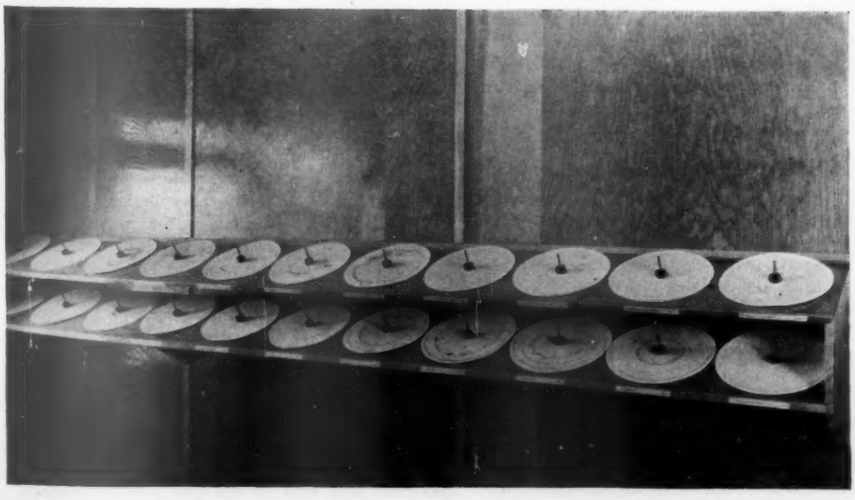


Three-Piece Steel Mud Trough

A major company rig at Ventura, Calif., uses the mud trough shown in the accompanying photograph. It is a three-piece trough curved to receive the discharge pipe from the well. At the far end it is bolted directly to three mud tanks with plates provided for directing the flow into the desired tank. For moving short distances the trough can be dragged on its skids without dismantling, but for longer hauls it is unbolted to form three pieces that can be loaded onto a truck.

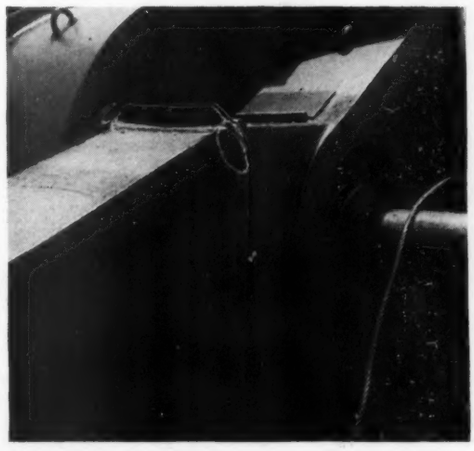
Keeping Recording Charts Readily Accessible

A convenient arrangement for keeping recording charts so that they might be readily accessible for observation has been devised by the personnel of a distillate recovery and recycling plant. Shelves, having a width in excess of the diameter of the charts, were fastened to the wall at a readable height. A row of metal pegs, spaced uniformly at sufficient distance apart to allow clearance between charts, was set in each shelf. There is a peg for each recorder in the plant, and charts removed each day from the recorders are placed on their respective pegs, the latest day's chart on top. Proper identification of each peg is marked on the edge of the shelf. Metal ring weights hold charts on pegs. At the close of each month charts are removed and permanently filed.



Holder for Measuring Tape

Eliminating the time lost searching for a mislaid tape line, and at the same time protecting it from damage which it might sustain were it left on the work bench or laid down on the derrick floor, a steel frame, slightly larger than the tape reel and flanged on the back to permit its attachment, is fastened to the back-up post. A small hole at the base of the container permits any water or mud which has clung to the tape during use to drain off. A flap or inner tube rubber or other flexible material, tacked atop the post, provides complete coverage for the tape, it merely being thrown back when the tape is needed.



Chafing Guard for Catline

Pounding of the catline against the angle where the rotary chain guard attaches to the draw-works cover concentrates severe wear on a few wires of the line and results in premature failure. To guard against this stressing of the line, a chafing piece is welded inside the angle, which extends out beyond it to take the slap of the line. The chafing piece is a short length of 2-in. pipe, beveled top and bottom, the rounded surface of the pipe serving as guide for the line as it strikes it, and distributing the force of the blow over a comparatively wide area of the line.

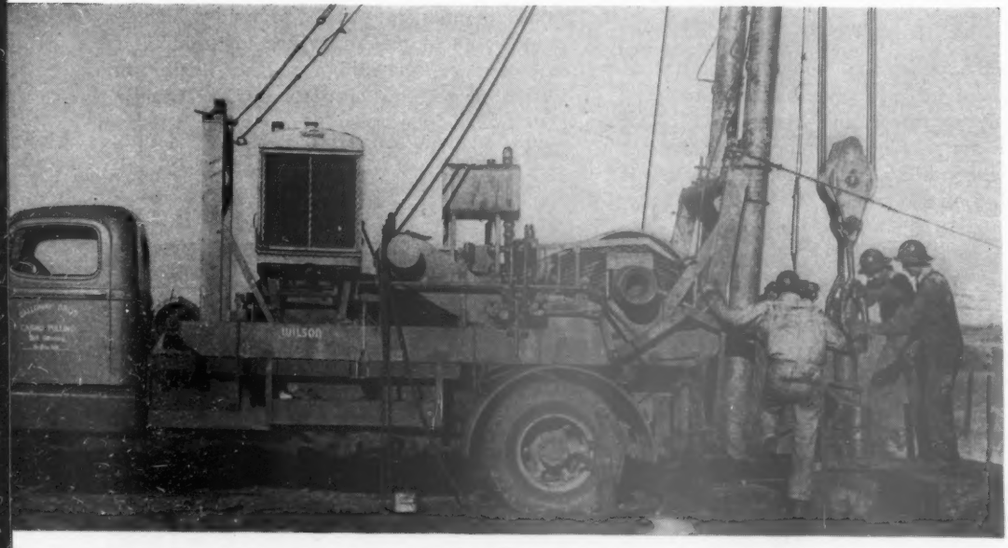
Better Pulling Methods Permit Greater Recovery of Casing

By D. H. STORMONT

Improvements in pulling equipment and methods are permitting the recovery of much greater percentages of casing from abandoned oil wells. Due to the present shortage of casing, this development is of noteworthy importance. In North Texas where there are several thousand shallow stripper wells, salvaging of casing from old wells for use in new producers is increasing. In that area an 80-85 per cent recovery of casing is being had from most shallow wells, at a cost to the operators of 12½ cents per foot of recovered pipe.

IMPROVED pulling methods adopted by oil companies and contractors are permitting the recovery of a much greater percentage of casing from abandoned wells. In the past, salvaging has not played an overly important role in the industry's operation, but the present shortage of oilfield equipment is causing this phase to assume enlarged proportions.

Until recent years, prior to the introduction of combination hydraulic and block-and-line pulling machines, all work was done with straight winch equipment. If only a few hundred feet of casing was recovered from a 1,500-ft. well, most operators were satisfied. With the use of modern pulling equipment and improved methods of recovery, today it is not uncommon to obtain 100 per cent of the casing from wells over 4,000 ft. deep. In shallower wells casing shoes were being pulled with monotonous regularity and in one 4,700-ft. well 100 per cent of the casing was recovered.



Pulling casing from a North Texas well with a truck-mounted winch after the casing has been shot free

Due to the present shortage of casing and line pipe this development is of noteworthy importance. Operators are abandoning wells that are uneconomical or marginal in their operation in order to recover the casing for use in new shallow wells or as line pipe. If there is no present use for the size casing salvaged, it is traded to other operators for pipe of the size and weight needed.

Much of the casing recovered from these old wells is generally of No. 1 or No. 2 grade, and in the hole is worth in the neighborhood of 75 cents per foot. Thus casing in a 2,500-ft. well is worth about $1,875, less pulling expense. In a well producing 1 bbl. per day, it would require several years for the operator to realize that amount of net profit from the well's operation, and still longer if interest on the investment is considered. Or if the casing is needed for another well that is being drilled, the operator can realize a much greater profit from the investment if the casing is pulled and rerun in the new producer.

An outstanding instance of the present worth of salvaged casing recently took place in North Texas. One operator abandoned eight 3,000-ft. wells that had been producing for over 10 years and sold the salvaged casing for the original cost.

North Texas Is Outstanding Area

In North Texas, where there are several thousand shallow wells that have been producing for 15 years or longer, this abandonment of old producers is keeping casing-pulling contractors busy. Some of the district's largest contractors state their work is running as much as 30 or 35 per cent over a year ago.

This increase is reflected in Railroad Commission data on the number of North Texas wells being plugged and abandoned. During the first 7 months of 1940 a total of 250 oil wells were plugged, while in the like period of this year a total of 493 have been plugged—almost twice as many. These figures represent only abandoned oil wells and do not include dry holes that were plugged.

In this area the present contract price is in the neighborhood of 12½ cents per foot of recovered pipe. If mud or oil is circulated, however, the prices are somewhat higher. This general price, though, compares with 50 cents per foot several years ago for the same type of job. Thus casing in wells only a few hundred feet from some that were plugged a few years ago is being pulled at almost one-fifth of the former cost to the operator. And not only is the work costing him less, but he is obtaining an 80 to 85 per cent recovery.

Pulling Equipment

Straight block-and-line machines are still used in North Texas for pulling casing in 1,500 to 2,500-ft. wells, but most of the work involves hydraulic equipment for freeing the casing.

Machines used are skid, truck or trailer-mounted, usually with a telescopic double-leg mast of about 75,000-lb. capacity. Gasoline engines of around 110 hp. are used to drive single-drum winches having a spooling capacity of some 3,300 ft. of ⅞-in. wire line. Design of the rigs permits them to start pulling within 2 hours after moving on the lease.

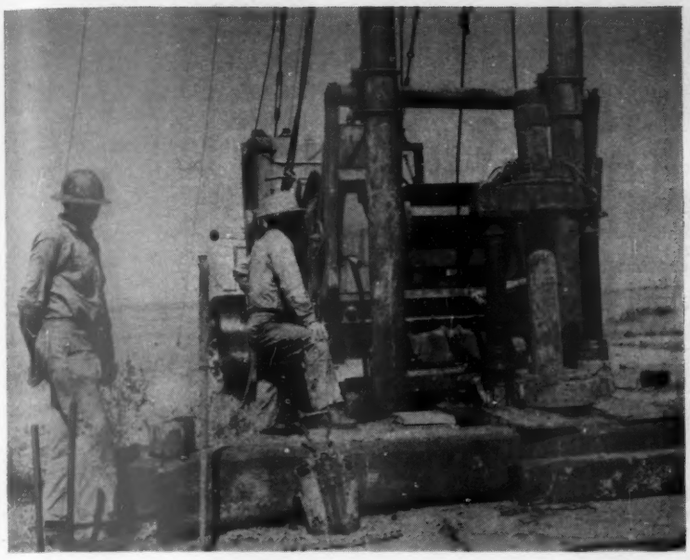
Where hydraulic equipment is used, the hydraulic pumps are generally mounted between the winch and motor and driven by a double chain drive from a countershaft. Pumps used by some contractors are six-cylinder and have a 10,000-lb. capacity. The hydraulic lifts used with these machines consist of two double ram-type, 5¼-in. bore by 5-ft. stroke jacks having a lifting capacity of 200 tons.

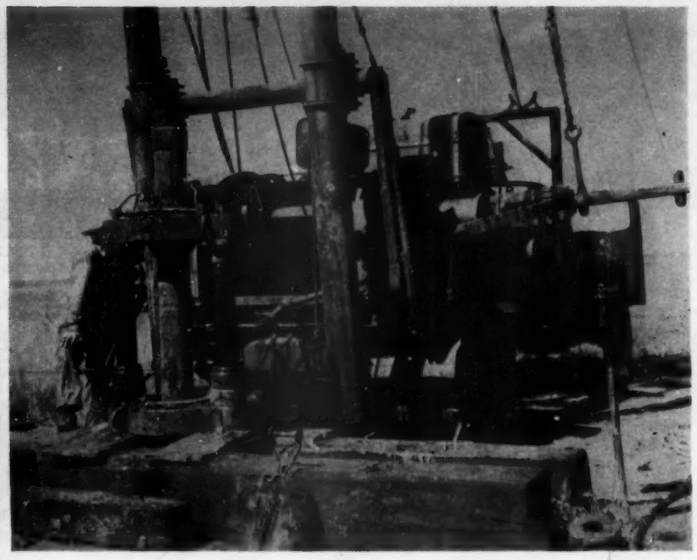
Methods of Pulling Casing

After the pulling machine is placed over the well and guyed down, the hydraulic jacks are set up. They are connected to the pump by fitted lengths of pipe and hammer-type unions. The jacks are linked together with two steel arch bars and upper and lower spiders equipped with subrings to fit standard A.P.I. slips. It is highly important that the jack foundation be level and the spiders be centered in order to place a straight pull on the casing. A short piece of casing is run through the spiders and, by use of a swedge, if necessary, screwed onto the casing string. The slips are then placed and pulling is ready to start.

In loosening the pipe the amount of pull placed on the casing is governed largely by the length of the string and the age and weight of the casing. In a 1,650-ft. well 15 or 20 years old and equipped with 20-lb. lap-weld casing, a maximum pull of 85,000 to 90,000 lb. per sq. in. is exerted. If 22-lb., 8 round-thread seamless casing is being pulled, maximum strain of 175,000 to 250,000 lb. will not usually endanger the pipe.

The pressure is applied slowly until the estimated maximum safe pull is reached and then the jacks are lowered. This intermittent application and removal of tension tends to free the pipe from the surrounding formations and makes for greater recovery. It is continued until the amount of "stretch" obtained remains fairly constant at maximum safe load. When this point is reached,





Left: Freeing casing prior to pulling by use of hydraulic jacks. A vacuum pump mounted on the truck supplies the power for lifting. Right: Hydraulic casing-pulling machine equipped with double leg mast at work on a 1,600-ft. well in Wichita County, North Texas

the contractor is able to estimate the length of pipe that will be recovered.

Through experience it has been found that in pulling old 20-lb. lap-weld casing, a stretch of ¾-in. indicates 100 ft. of casing recovery. In newer 22-lb. seamless casing each 100 ft. of recovery is indicated by 1 to 1½ in. of stretch. Thus in a 1,600-ft. well equipped with 20-lb. lap-weld casing, if a 11-in. stretch was obtained it would indicate that recovery of about 1,500 ft. might be expected.

To recover the casing a small shot of solidified nitroglycerin is run in on a wire line. It is spotted at the first collar above the depth to which the casing is expected to be recovered. This is done by means of "feelers" placed on the wire line with the shot. The feelers are expanded when they reach the correct depth and then pulled up a few feet until they strike the first collar. The shot is then fired by dropping a weight, or by any of several other common methods.

In most shallow pulling operations the casing is then pulled from the hole by the winch. This method is used in preference to the hydraulic to avoid possibility of damaging the pipe and to take advantage of the speed offered by the winch.

Use of Mud and Live Oil

In some instances after the upper portion of casing has been shot free, additional steps are taken to insure a good plugging job. Or in some deep wells, to obtain a greater recovery of casing.

It has been found that much more successful plugging jobs could be made if mud was pumped into the hole prior to pulling the casing. The method used by Galloway Brothers, casing-pulling contractors of Wichita Falls, Tex., is as follows:

Immediately after the casing is shot off, 2-in. tubing is run and set near bottom. A small mud pump is connected to a truck-mounted storage tank and about 20-lb. mud is circulated down the tubing and up through the casing until a clean mud is flowing into the pit. This would indicate that all salt water and oil have been removed from the hole.

In deeper wells one growing practice is to spot live oil behind the casing in order to raise the percentage recovery. This has been done most widely in the K.M.A. field where ordinarily only about 1,600 ft. of casing is recovered by usual methods. If live oil is pumped behind the casing, however, usually some 3,500 ft. of pipe is salvaged from the 3,900-4,000-ft. wells.

In applying this method the casing is first shot off at around 3,500 ft. Mud circulation is established and about 125 bbl. of live oil is pumped down the hole and up behind the casing. The well is then closed in for 12 to 24 hours before the casing is pulled.

Spotting oil involves the use of large cement-truck pumps, and that cost plus the standby time involved acts to substantially increase the contractor's price for the job. Usually, though, the extra footage of casing recovered more than offsets the higher cost of the method.

Some work has been done with dead oil and fuel oil but it usually was not successful.

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North Novice Is West Texas' Deepest Repressuring Project

THE accompanying view is of a new $70,000 pressure-maintenance plant being installed in the North Novice field of Coleman County, Texas, for the Robertson & McKissick Co., of Haskell, Tex., and States Oil Corp., of Eastland, Tex., under a joint-operation plan.

The plant began operation about the middle of last month. Engineering and installation was under supervision of J. Daviss Collett, Jr., of Houston, Tex., and is believed to be the deepest pool in West Central Texas to be repressured.

The sand to be repressured is the Gardner, Strawn series, found at approximately 3,500-3,600 ft. Four injection wells are to be used on leases producing from 27 oil wells. Gas is to be sent through the plant at a daily rate of 2,061,000 cu. ft.

The plant is equipped with two 300-hp. eight-cylinder, three-stage compressors designed to take 2,280,000 cu. ft. of gas daily from an inlet pressure of 10 lb. to a discharge pressure of 1,500 lb.

The cooling tower is of Pritchard redwood, brass fitted, 35 ft. in height with a 24 by 23 ft. concrete basin. The plant will have 26,000 ft. of welded line in its gathering and distribution system.

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Continuous Weather Recording Provides Refinery Protection

By NEIL WILLIAMS

TEXAS CITY, Tex., Nov. 25.—The value of continuous recording of weather data as an adjunct to modern refinery operation was given specific verification by Pan American Refining Corp.'s success in keeping its Texas City, Tex., refinery running during the recent tropical hurricane on the Texas Gulf Coast. The saving effected in prevention of lost time on that occasion alone more than justified the costs and efforts which have been expended by this company since the beginning to provide complete information on atmospheric conditions.

Other refineries, as well as other industrial plants, without weather-recording service of their own, and which, on the basis of storm warnings issued by regular weather-reporting agencies, were expected to be in or near the projected path of the storm, were shut down, resulting in lost production time of from 24 to 48 hours. Some plants as far away from the path of the storm as Corpus Christi also were shut down as a precaution against the possibility that the storm might veer in their direction.

Pan American Refining Corp., with its own weather-information facilities, was posted at all times as to the exact position of the storm, its course and intensity. With this information the company operators were able to pass qualified judgment as to the danger to the refinery and personnel.

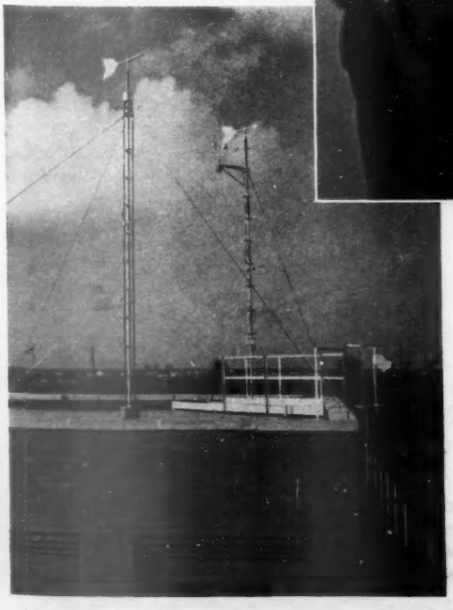
Operators were prepared to shut down the plant quickly in the event that it was indicated at any time that the plant would be in the direct path of the storm or that the intensity of the storm might make continued operation hazardous. However, it was expected to keep the plant going as long as safely possible.

Wind Velocity 83 M.p.h.

Center of the hurricane passed slightly to the west of Texas City following a northerly course through the immediate Houston district. Maximum wind velocity recorded at the Pan American refinery was 83 miles per hour. There were several periods each of 5 minutes duration in which the velocity averaged 72 to 73 miles per hour, and for 1½ hours during the height of the storm there were long periods in which a sustained velocity of more than 60 miles per hour was recorded.

Right: P. J. Sweeny, superintendent, and G. D. Watson, laboratory supervisor, Pan American Refining Corp., observe the continuous weather-recording instruments in the company's Texas City, Tex., refinery

Below: Outside weather instruments on top of the laboratory building of Pan American Refining Corp.'s Texas City, Tex., refinery



Ability of the plant to operate throughout the storm attests to substantiability and reliability of modern refinery design and construction. Cooling towers, stacks and other structures had been built to withstand wind velocities of at least 125 m.p.h.

Every precaution had been taken, however, to guard against mishap. A thorough inspection was made of all equipment to make certain everything was in good condition. Guy lines on stacks were tightened, and temporary guy lines placed on construction work, of which there happened to be little. All loose material which might be picked up or battered by high winds was secured thoroughly, one of the greatest hazards being the possibility that a vapor line might be broken by some loose object being blown against it.

Fluid levels in storage tanks were equalized so far as feasible. Floating roofs were lowered inside the tanks so that the wind could not whip under them. One nearly completed tank was partially filled with water, providing enough weight to hold it.

Extra stillmen and helpers were added to each shift during the emergency to insure prompt action if it became necessary to shut the plant down hurriedly. Off-shift men voluntarily offered their services to remain on duty, providing augmented crews throughout the plant.

Charging rates of the combination units were cut back slightly. The poly plant already was operating at slightly reduced capacity because one cracking unit was offstream for cleaning. It was not necessary to cut back the hydroforming unit.

The entire plant can be shut down from the central control room. The complete shutdown can be effected within 30 minutes.

Tanker Suffered No Damage

A tanker at the refinery dock continued loading cargo until about 7 o'clock on the night of the storm. At that time it was no longer considered safe to continue loading. Although not completely loaded, the ship was believed sufficiently low to insure reasonable stability, and, tied securely against the pile clusters, no damage was done to it. A tug and a barge fleet, also in to load, were moored in a protected spot in the harbor.

Electric power is generated at the refinery and all lines and control leads are laid in underground cables. The only overhead line is that serving the power and lights used in the office buildings, tank farm, water wells, and laboratories. During the height of the storm a break occurred in this line, putting out the lights in the laboratory where the weather information was being recorded, but the trouble was remedied quickly. For a 10-hour period following the storm until regular power lines serving Texas City could be repaired, the plant supplied the city with power for use at the city hall, postoffice, and telephone exchange, and in pumping city water wells.

P. J. Sweeny, manager of the refinery, and G. D. Walters, laboratory supervisor in charge of the weather instruments, remained in the weather laboratory throughout the emergency. One of the employes of the company, possessor of a short-wave radio receiver especially adapted for marine broadcasting, brought his receiver to the refinery and maintained contact with the Coast Guard stations at Galveston and elsewhere along the coast. The company now is considering permanent installation of a short-wave receiver in the laboratory. All observations on weather conditions and the storm were promptly reported to operating men in the plant and, in turn, those in the lab-

oratory kept in constant touch with operators in various parts of the plant on how various units were functioning.

The laboratory contains all the latest and most efficient instruments for indicating and recording all atmospheric conditions, and is more complete in this respect than many government stations. It includes an anemograph for indicating all variations in wind velocity, recording the highs and lows on a continuous chart; a combined wind-direction, wind-velocity and rainfall recorder; a hydrothermograph for recording temperature and humidity; a maximum and minimum thermometer, and a recording barograph.

Continuous recording of weather data was inaugurated by Pan American Refining Corp. shortly after operations of the refinery were started. The service was undertaken originally with a view to obtaining information on atmospheric conditions and weather changes or trends over a period of time to be used in determining construction and plant-operating requirements. Ordinarily, minor changes in atmospheric conditions have a negligible effect on operation of a modern refinery. However, heat-exchange equipment, cooling towers and furnaces are affected to some extent by changes in temperature, winds and humidity. Recording of weather data might be justified on operating economies alone, even in areas where fluctuations are mild. Now, it is realized that in a locality such as the Gulf Coast, where meteorological abnormalities such as intense seasonal storms, excessive rainfall and high tides are frequent, accurate weather information, promptly available, is not only economically justified but a practical necessity.

Methods of Determining Value of Native Clays Used As Drilling Muds

By V. B. ZACHER
Test Engineer, Tide Water Associated Oil Co., Ventura, Calif.*

MANY tests have been run in the last 10 years on a great variety of native clays to discover which had worth as a drilling mud. The forms used for reporting tests of native clays are as varied as the number of companies involved. Naturally, each of them has a form most suited to its own needs. In the case of Tide Water Associated it has used a standard tabulation showing the more important characteristics of mud, such as weight at a given viscosity, water loss, cake thickness, and reaction to phosphate chemicals. This tabulation of properties has always been difficult to use in evaluating mud for the reason that a mud might be high in weight (in most cases desirable), and poor in water loss; or excellent in water loss and poor to fair in weight. Most ordinary clays picked up by some one who feels that maybe he has discovered a good source of rotary mud, fall in the first category.

Then, too, there is the question of attempting to judge colloidal clay or gel in the same manner as average or high-weight drilling mud. This is not really possible because the two clays are very dissimilar and actually are used for different purposes upon different drilling jobs. We have, therefore, devised two formulas as a means of judging each of these two classes of clay.

To digress a little, this method of evaluating the clay is somewhat analagous to the work of R. L. Rolf, consulting metallurgist, who published an article in the July 1934 issue of Heat Treating and Forging. He has devised in this work a formula which combines four properties of steel; viz., ultimate strength, yield point, per cent elongation and per cent reduction of area. Ordinarily, in any steel if the per cent elongation and reduction of area is great, the steel is ductile, hence the yield point and tensile strength is low (for instance, lead). In other words, ductility is usually obtained at the expense of tensile strength. Mr. Rolf pointed out that any steel is a good product if it has a combination of both high ductility and high tensile strength. His formula resulted in one number which is proportional to the merit of the steel.

In considering clay for drilling mud, we can likewise say that if a mud used for ordinary drilling has high weight, yet a low water loss, it is, barring certain impurities, a good product. By look at these characteristics separately we cannot tell what mud has the most merit, so we have combined our more important mud tests into a formula which means that the excellence of a drilling mud is directly proportional to the weight and inversely to water loss, cake thickness and drop in viscosity due to chemicals.

Likewise with a light or colloidal mud we can also say that the same relation may be used with the exception that weight is not now important. In its place we use yield expressed as number of barrels of mud per ton of dry clay. This yield value has the advantage of reflecting the colloidal condition of the mud because the higher the colloidity in general, the higher the yield in barrels of mud per ton of dry clay at certain viscosity.

In evaluating most mud by this expression we come out with a decimal and we have therefore indicated that the numerator is multiplied by 1,000, which removes the decimal. The water-loss tests are conducted in the case of heavy mud at 78 lb. per cu. ft., also at 185° F. This we believe is fair, because we are merely adjusting the weight of solids in each competitive mud to a definite value. Of course this treatment penalizes a lot of muds whose weight goes up because of high proportion of inert material. But this is still permissible, because we are trying to get a mud that is not ony high in weight, with a certain proportion of inert material, but which has also the proper particle size distribution and colloidity to still give us a very low water loss.

Likewise, in the light or colloidal muds, in determining water loss, we must use some other constant besides weight, with competitive muds, because these colloidal muds possess vastly variable weight characteristics and it is best to make constant the gel structure character of the mud. That is, we simply use a 30-second viscosity as the point at which all water losses are read. This is low enough so that thixotropy does not interfere with the filter characteristics. This is also at 185° F.

The tests necessary to substitute into these expressions can be easily conducted in any field laboratory, providing it is equipped with a proper mud mixer and hot plate, in addition to other ordinary instruments.

The two formulas together with a description of terms used are shown in the accompanying table.

*Presented at meeting of the topical committee on drilling practice, American Petroleum Institute, San Francisco, Calif., November 1941.

MERIT INDEX

AVERAGE OR HEAVY MUDS

$$\text{Index} = \frac{1{,}000\,W}{L\,T\,R}$$

Where:

W = mud weight (lb. per cu. ft.) at 30 sec. visc.
L = water loss (cc.) at 78 lb. per cu. ft., 185° F.
T = cake (mm.) at 78 lb. per cu. ft., 185° F.
R = reaction to TSPP (from 30 sec. visc. at 1 lb. per bbl. or 1.7 g. per 600 cc.)

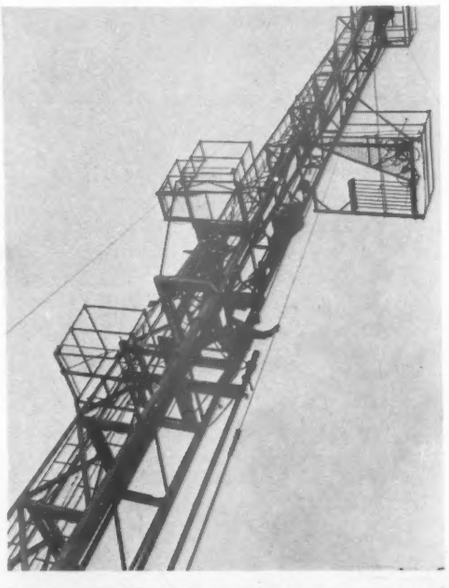
LIGHT OR COLLOIDAL MUDS

$$\text{Index} = \frac{1{,}000\,Y}{L\,T\,R}$$

Where:

Y = yield bbl. per ton. at 30 sec. visc. $\dfrac{222}{W-62.4}$
W at 30 sec. visc.
L = water loss (cc.) 30 sec. visc., 185° F.
T = cake (mm.) 30 sec. visc., 185° F.
R = reaction to TSPP (from 30 sec. visc. at 1 lb. per bbl. or 1.7 g. per 600 cc.)

Notes: (1) All clays are thoroughly blunged and mixed in a gear pump or equivalent mixer.
(2) All viscosities are read at 500 cc. in, 500 cc. out, using a $\frac{7}{32}$-in. orifice.
(3) All filter tests are taken at 100 lb. per sq. in. from zero to 15 minutes using a 3-in. diameter cell.



Open-face derrick used in California is equipped with special safety platforms to comply with that state's industrial laws. Double-drum unit allows tubing blocks to remain strung while swab is run

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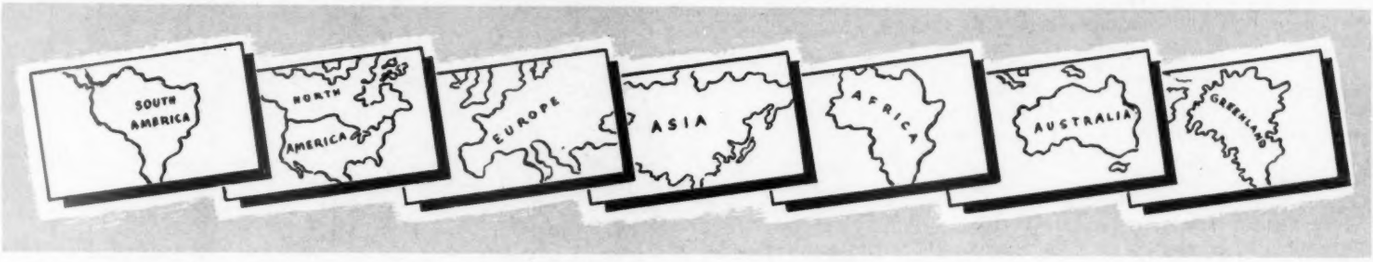

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Practical Application of Flow Valve Installation Principles

(Continued from Page 49)

600 lb. — 125 lb. = 475 lb. or 1,080 ft. of fluid. Since valve *D* is submerged below the casing fluid level, valve *C* must operate if the well is to flow from this condition. Examination of Fig. 5 shows that there is only 1,364 ft. — 309 ft. or 1,055 ft. of fluid above valve *C* or an insufficient amount to allow it to reopen. Therefore, the maximum spacing depends on the differential opening pressure of the valve regardless of the casing pressure.

Many flow valves are so constructed that a sudden imposed load equal to the fluid load necessary to reopen them will often cause them to fly open at an improper time allowing excess gas to pass into the tubing string, resulting in an inefficient operating gas-oil ratio. If valves are spaced too close together, the weight of fluid plus flowing fluid friction (discussed below) is often enough to impose this load on upper valves, causing them to reopen. This is known as interference, and is probably the most common factor contributing to inefficient flow valve operation. It can be helped by correct spacing but eventually must be eliminated by improved valve construction.

The double-seated type of valve mentioned previously seats in both directions, hence the sudden imposed load due to flowing friction causes the valve to shut on the lower seat, tending to eliminate much of the inefficiency and gas wastage of single-seated valves which tend to fly open under a high flowing friction load. For this reason when a fairly long string of single-seated valves are run, it is often advisable to install "kickoff" type valves (previously discussed) in the upper part of the string.

The number of valves necessary to flow the desired production and still maintain a fluid seal around the perforation sufficient to prevent gas in casing from "blowing around," is final determination in an open-type flow valve installation. Productivity index information is here applied.

To illustrate, using our original example (Fig. 1), the well is known to have an index of approximately 0.4 bbl. per day per lb. bottom-hole-pressure drop. This was obtained by actual test in which the bottom-hole pressure dropped from a maximum of 920 lb. to 670 lb. at a settled daily production rate of 100 bbl. The maximum static fluid level in the casing at 400-lb. casing pressure and 0.33 lb. per sq. in. per ft. gradient is easily calculated to be at a depth 1,100 ft. + 1,212 ft. or 2,312 ft. Assume that production requirements are 100 bbl. per day. The productivity index of 0.4 bbl. per day per lb. bottom-hole-pressure drop means that at 100 bbl. per day production rate, the bottom-hole pressure will be reduced an additional 250 lb. This in turn means a further lowering of casing fluid level by the amount of the pressure drop divided by the gradient or 758 ft., establishing the working fluid level at 2,312 ft. + 758 ft. or 3,070 ft.

If 100 bbl. per day is estimated to be the maximum desired production for several years, and if the reservoir characteristics are such that an abnormal pressure decline is not expected, the present working fluid level can be used to determine the position of the bottom valve. Theoretically, in this example, no valves would be necessary below 3,070 ft. to obtain the desired maximum daily production of 100 bbl. Actually, it would be practical to add an additional valve to allow for reasonable error in calculating the the working fluid level, and to allow for moderate reservoir pressure decline.

Our complete installation, as shown in Fig. 1 would now consist of four valves, top valve at 2,084 ft., valves spaced 341 ft. (11 tubing joints) at 2,425, 2,766 and 3,107 ft.

If the well makes water in sufficient quantities that a slug may at any time stymie present installation spaced for oil, valve spacings must be rereduced to 248 ft. Top valve in this example would be placed at same depth since the bottom-hole pressure will support only a certain weight of fluid regardless whether it is oil or water. Setting for this condition, assuming even a small amount of water as shown in Fig. 6 would now be six valves set at 2,084, 2,332, 2,580, 2,828, 3,076 and 3,324 ft.

Flowing Friction

An important but difficult factor to determine is the flowing friction created by the gas and oil in its upward travel through the tubing. This factor affects directly the depth from which a well can be gas-lifted at any given casing pressure.

While no definite value can be predicted for any particular condition, experience has shown that a conservative figure to use for flowing water is 0.1 lb. per sq. in. per ft. of depth or 100 lb. friction loss per 1,000 ft. Lifting oil or fluids with entrained gases, would naturally reduce this figure. Theoretically then, lifting water from 3,000 ft. would require a minimum casing pressure of 300 lb. + 150 lb. (the closing differential pressure of the valve) or 450 lb. to shut the valve. Since the average well will operate from this depth with 350 lb. casing pressure or less, this figure is too high in most cases. Experimenting with the well by successively lowering the casing pressure and determining with a subsurface recording pressure gage the actual valve from which a well is flowing under any given condition, the correct flowing friction can be estimated.

Although 400 lb. operating pressure is used in these examples, this does not mean that 400 lb. is the most efficient casing pressure to use in wells of this depth. On the contrary, many wells will operate much more efficiently on a lower casing pressure. The operator should determine by gas pressure regulation and testing, the most efficient working casing pressure for any particular condition. A safe rule-of-thumb from which to start is 100 lb. casing pressure per 1,000 ft. of well depth.

Flowing Gradient

After a well in which flow valves have been installed is placed in operation, it is always advisable to run a recording subsurface pressure gage while the well is flowing, and from the data obtained construct a flowing gradient curve similar to the static gradient curves shown in Figs. 1 and 6. With this information in front of him, the engineer or operator can tell at a glance from which valve the well is flowing, and derive other valuable information such as flowing friction. If a set of flow valves are not operating satisfactorily the reason can usually be determined from the flowing gradient curve. Difficulties such as over-submergence, interference, stymied condition due to overspacing, inefficient gas-oil ratios due to excessive flowing friction, etc., can be readily diagnosed from an examination of the flowing gradient curve.

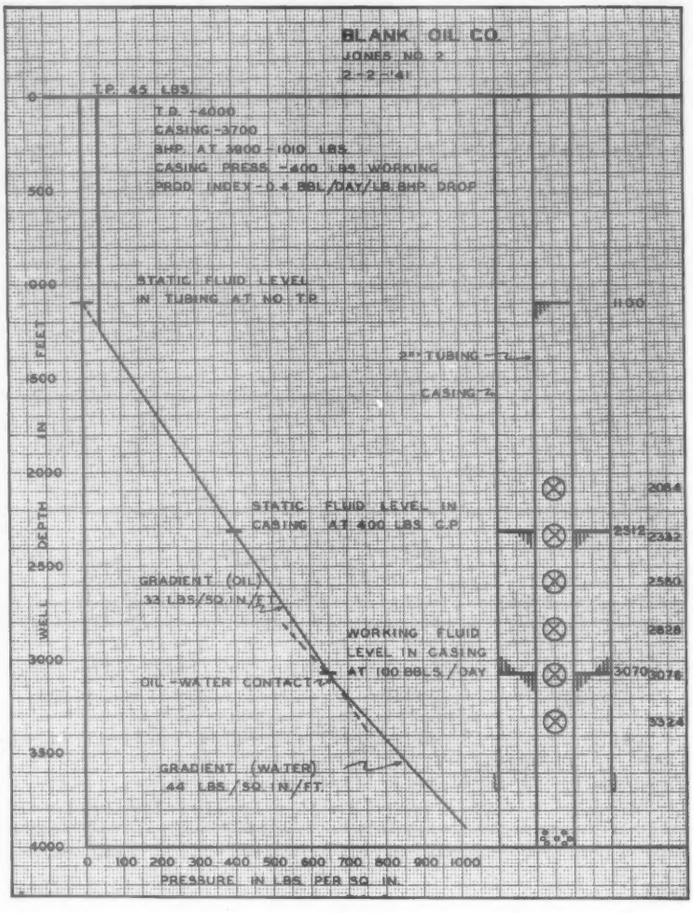

Fig. 6

Semiclosed Installations

When a well has a reasonably high bottom-hole pressure, but a productivity index so low that the working fluid level in the casing will "blow around" through the perforations before the well has produced the desired amount of oil, a packer must be set below the bottom valve to prevent this "blowing around."

For example, assume a 4,000-ft. well with sufficient bottom-hole pressure to reach a maximum static fluid level of 1,100 ft. from top, but with porosity and permeability conditions such that the productivity index was only 0.1 bbl. per day per lb. bottom-hole pressure drop; available casing pressure 400 lb., and making an appreciable per cent water of gradient 0.44. This is typical of many small "tight" edge wells. Using the same method illustrated in Fig. 1, we see that the maximum static fluid level at 400 lb. is at depth 2,312 ft. Assume that it is necessary to lift 80 bbl. fluid per day to produce the daily oil allowable. A simple calculation shows that producing 80 bbl. from a well with index 0.1 would mean lowering this bottom-hole pressure an additional 800 lb. or 1,818 ft. at gradient 0.44 lb. per sq. in. per ft., or 2,312 ft. + 1,818 ft. giving a theoretical working fluid level of 4,130 ft., showing that

well would blow around before desired production was obtained.

To prevent this, flow valves are run as in an open installation, with packer closed below the bottom valve. *No standing valve* is run on the tubing. This is the chief difference between a semiclosed installation and a closed installation. There are several reasons for not running a standing valve below the packer in a high fluid level well, most important of which is the fact that when well is closed, fluid rises and tends to pass through the flow valves into the casing annulus. With tubing and casing full, and the standing valve preventing unloading of the casing by injecting gas pressure down the tubing and reversing the flow, it is then necessary to unseat packer to lower the casing fluid, uncover the valves, and kick the well off. Some flow valves are made with a nonreturn or check valve feature which tends to prevent the fluid from equalizing rapidly through the valves into the annulus. In the semiclosed installation it is best to produce the well continuously if practical and to leave the outside pressure on the casing when it is necessary to close in the well.

When valves are first run as described above, it is necessary to connect gas to the casing and kick the well off before setting the packer in order that all of the oil in the annulus above the packer will be removed and the annulus left dry. Then the packer can be set and the well left on production, flowing intermittently off the bottom valve every time the fluid input from the well rises in the tubing a sufficient height above the valve to cause it to reopen. If a control-head-type packer is used, it is set in the open position, the well is flowed till the annulus is dry, and the packer then closed.

To avoid the time and extra expense necessary to connect gas to the casing, unload the annulus, and then set the packer, it is usually better to install a regular bypass type seating chamber just above the packer. This chamber has four ¼-in. ports through which oil in the casing annulus can be unloaded after the packer has been set. Then it is a simple matter to install a blank drop valve in the seating chamber, closing off the ports between the casing and tubing, and permitting the well to be operated as a closed or semiclosed installation.

The body of the blank drop valve is approximately 18 in. in length and has two sets of 1 25/32-in. seating cups which seal above and below the seating chamber ports. The drop valve is readily removed by fishing it out using the regular wire line measuring equipment and a common ⅝-in. rod socket catching a fishing neck of that size on the valve.

In addition to the unloading feature resulting from the use of the seating chamber and the blank drop valve, another definite advantage is apparent. As the well declines in pressure and potential and passes from the tubing string flow valve operation stage, the blank drop valve can be pulled and one of the several types of valve center sections added to the drop valve body at very little extra cost. With this flexibility the operator may convert his blank drop valve into a removable bottom-hole intermitting flow valve, a removable diaphragm-type valve operated by surface control of pressures, or a removable wire-line valve also operated by special surface equipment.

The addition of a seating chamber to the original flow-valve installation adds considerably to the flexibility of a complete gas-lift system and permits orderly progress with minimum expense, of a program aimed at economic depletion of the well by gas-lift methods.

It is always wise to test flow valves just before they are run and immediately after pulling.

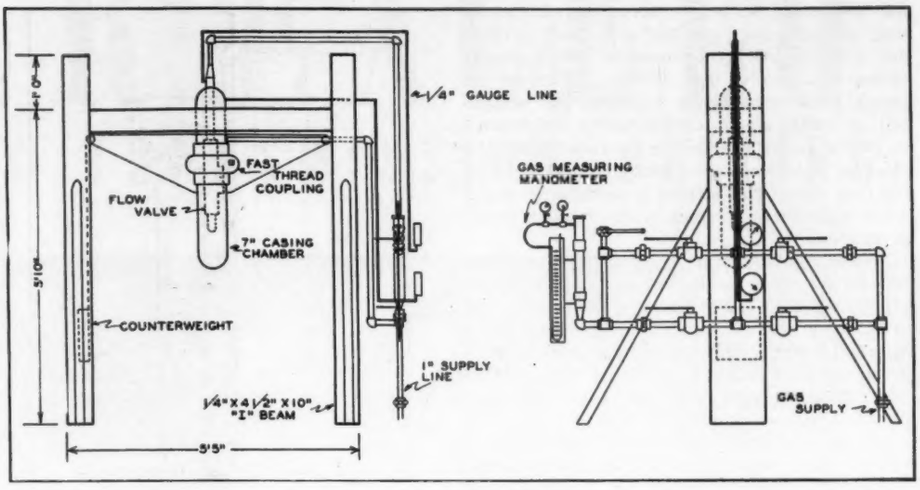

Fig. 7—Flow-valve test rack

The former assures that the valves are correctly set and operating properly. The latter gives information as to performance and service of valves just removed, including loss of spring tension, increase of leak through valve port, valve plugged or partially stopped up with scale, packer rubber, soft rope, etc.

The test rack itself is of simple design and construction, costing less than $100 to build and considerably worth while if many sets of flow valves are to be installed. As shown in Fig. 7, it consists of a casing chamber with a fast thread coupling, the chamber of sufficient length and diameter to accommodate the largest flow valve to be used.

A chamber made of 5½-in. casing 40 in. long will accommodate most 2-in. and 2½-in. flow valves. The chamber is so built that the flow valve screws into a 2-in. pressure supply nipple inside the top. The valve is bull-plugged on its other end, and the chamber is then enclosed around the valve. Gas is connected by a 1-in. line from the supply to the casing chamber, and by a separate 1-in. line from the nipple into which the flow valve is screwed, back to the supply or vented to the air. This arrangement simulates well conditions since the gas from the chamber (casing) must pass through the valve port into the 2-in. nipple (tubing). By manipulating the 1-in. plug valves on the manifold at one side of the rack, any combination of load pressures can be put on the casing or tubing side of the flow valve being tested. The rack is complete with necessary gages, gas measuring equipment and weights to balance the chamber when the latter is being engaged or disengaged.

All test racks may not give exactly the same results, especially on the blowdown closing pressure and volume through the valve being tested. Friction and back pressure of the gas through different systems of piping, give somewhat different results. However, by checking the test rack against manufacturer's results a correction factor can be determined. If field tests are made with gas, and the manufacturer uses compressed air or gas of a different specific gravity, a proper correction in the calculated volume should be made.

Flow-Valve Christmas Tree

To the usual type flowing well christmas tree it is necessary to add input gas and well equalizing connections as shown in Fig. 8. Outside gas supply is tied in by 1-in. line with gate valves so arranged that either outside or well gas can be applied down the casing or down the tubing as desired. Arrangement of the 1-in. gate valves further permits recording of tubing and casing pressure while the well is flowing. Fig. 8 shows a choke on the flow line. However, it is sometimes necessary to install a full opening gate valve since in some installations, particularly where single-seated valves are used, the additional flowing pressure built up by the choke restriction is enough to hold some of the flow valves open, causing inefficient operation.

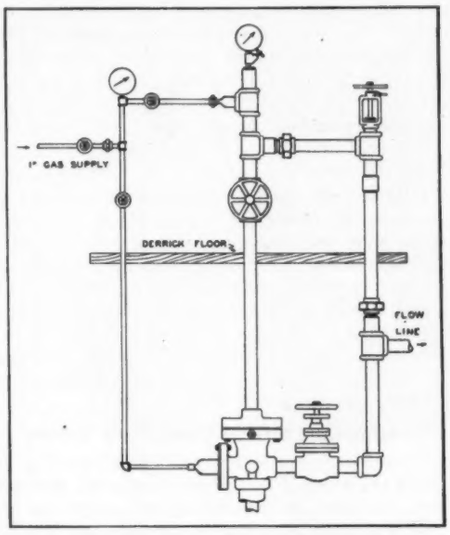

Fig. 8—Well connections flow-valve well showing gas-supply hookup

Difficulties to Be Avoided

In running flow valves, many minor difficulties arise which might easily be avoided. A few are mentioned:

Gas scrubbing: In corrosive areas like West Texas, a fine black material, primarily iron sulfide, forms in the gas lines and is a constant source of trouble in many gas-lift areas. This material often lodges in the flow valve mechanism, tending to plug or retard proper valve action. A simple gas-line scrubber or scale extractor, similar to the one shown in Fig. 9 often eliminates or greatly reduces this condition. Occasionally, some of the material is so fine as to be almost colloidal, and passes on through the scrubber. An oil bath covering the gas inlet will overcome this, providing the gas velocity through the scrubber is low enough not to blow out the oil bath.

Kerosene, carbon tetrachloride and other sim-

ilar cleansing fluids are sometimes lubricated into the casing gas input line at the well to clean out paraffin and other material which might collect in the valve mechanism. A quart of the liquid, batch treated into the input gas periodically is usually ample. Occasionally it is necessary to reduce casing pressure to zero and inject the cleaning fluid down the tubing and back through the flow valve. This method is particularly useful when dealing with a "stuck" valve or one severely paraffined.

Proper regulation: If valve setting is designed for one particular casing pressure, and a different pressure is used, difficulty might be encountered in kicking off the well. Furthermore, every installation has a critical working pressure which gives the most efficient operation. With proper gas regulation equipment, the outside pressure desired can be accurately controlled.

Foreign material: When flow valves are to be run in a well from which a packer has just been pulled, the packer often shreds in the pulling operation leaving small particles of rubber suspended in the well fluid. These frequently lodge in the flow valves as soon as the well is put on production and cause considerable trouble. Wells which are drilled with cable tools, or bailed or swabbed by crews using soft rope line markers often give trouble. If any foreign material such as packer rubber or soft rope might be in the well it is important to swab the well clean before running valves.

Hints while running flow valves: Be sure to have an accurate check on counting tubing joints. One joint uncounted in the spacing of valves could result in a stymied, or at least an unsatisfactory operating condition. The installation must be run as designed, for efficient operation. Some flow valves will not operate if installed upside down. Check to see if valve is free of dirt and is installed proper side up. Blow gas line clean before connecting to well.

Lifting-Cost Saving Using Flow Valves

Flow valves are merely one more type of artificial lift which, when properly installed, and under conditions for which they are suited, can effect a substantial saving to the operator, in both investment and lifting cost. Where a free or cheap source of high-pressure gas is available, gas lift of some sort should surely be used, or certainly tried first before any other method of artificial lift. Where gas must be compressed or purchased at a comparatively high price, the economics of flow valves compared to pumping or other producing methods, will of course be the governing factor.

This argument against flow valves is often heard: "Why run flow valves if the well might have to be pumped later on to obtain maximum economical depletion?" Aside from the argument that some types of wells can even now be gas-lifted to economic depletion, the following illustration shows how a flow-valve installation can make money for the operator even if the well will later be placed on the pump:

Assume a well 4,000 ft. deep with six flow valves and packer. Installation complete, including $65 per valve, $65 for packer, $100 for miscellaneous fittings, scrubber, etc., and all labor and other expense would probably not exceed a total of $800. A cost of $3,300 for pumping unit complete with corrosive-resisting sucker rods might be considered a fair average for a 4,000-ft. well. Experience with lifting-cost records for a large number of flow-valve installations where outside gas costs are low, shows that on an average, pumping lifting costs can be estimated as 6 cents per barrel higher than flow-valve costs. Where corrosion and sand conditions are extreme this discrepancy will be much greater and, conversely, if operating gas costs are high, the difference will be lower or none at all. Assuming a 6-cent per barrel discrepancy between pumping and efficient flow-valve operation, and a daily allowable of 25 bbl. the following arithmetic evolves:

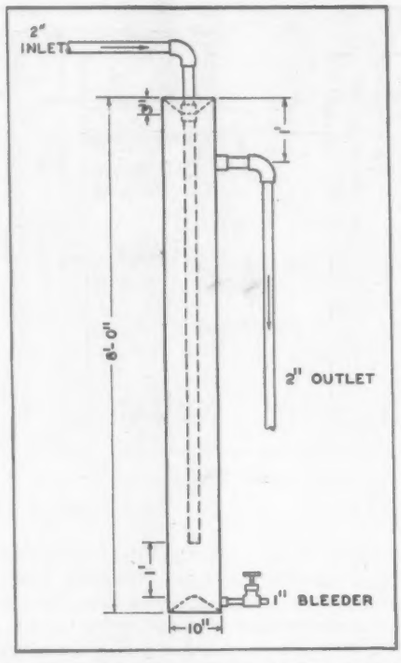

Fig. 9—Gas-line scale extractor. 1,000-lb. test, 10-in., 55½-lb. seamless casing. Concave top and bottom. ⅜ steel. Welded construction throughout

Pumping installation, complete	$3,300
Flow-valve installation, complete	800
Saving in installation cost	$2,500
Interest of 5% per year on $2,500, per year	$125
Lifting-cost saving—750 bbl. per month × 12 × 6 cents, per year	540
Depreciation—10% of $2,500, per year	250
Saving per year	$915

The above figures show that the average flow-valve installation operating under normal conditions should pay out in a year. If the future pumping stage is some 5 or 10 years hence, an even smaller differential in lifting cost will show a nice pay out.

Conclusion

This article is not presented as a complete work covering all flow-valve installations and operations, but is intended merely to be a progress report of the successful application of a few basic principles. There are many additional improvements necessary in flow-valve manufacture and much to learn about correct application of equipment in obtaining efficient operation. If the examples and their explanations contained herein can give the operator a starting point from which to develop a properly applied and correctly designed flow-valve program, then this article will have served its purpose.

It is becoming increasingly apparent that most of the difficulties encountered in the selection and installation of gas-lift equipment, have resulted from an insufficient knowledge of the necessary technical data of the well's characteristics. There is little doubt that a complete survey of a prospective gas-lift well; strict adherence to the proven principles governing submergence, spacing, type of valve, and type of installation; test-rack data on the mechanical status of the valve; and a follow-up flowing gradient to determine the valves' operation, would eliminate a large number of unsatisfactory flow-valve installations. A high degree of satisfactory gas-lift operation is at hand for the operator who will demand that this information be accurately obtained and carefully examined before and after flow valves are run in his wells.

The following conclusions are condensed from the body of the article and tabulated for convenience:

1. *Type of valve.* — Differentially operated, spring-loaded with a minimum of different settings, of which a 125-lb. reopening, 150-lb. blowdown close, 150,000 to 175,000 cu. ft. of gas passage, double-seated type has been found satisfactory, particularly for high-fluid level wells. Typical "kickoff" or unloading type single-seated valves are frequently run on top of a long string, and intemitting type valves are run on bottom.

2. *Submergence.*—Top valve be placed approximately 150 ft. deeper for oil and 75 ft. deeper for water than the fluid load necessary to reopen the valve. Factors effecting submergence are: casing pressure, fluid gradient (pounds per square inch per foot of depth), valve setting, and volume of gas valve will pass.

3. *Spacing.* — Depends entirely on reopening pressure of valve and maximum weight of fluid to be lifted. For 125-lb. reopening differential pressure, space approximately 8 tubing singles (31-ft. length) if water is present, and 11 tubing singles where well makes pipe-line oil. Spacing too far will stymie; too close spacing will cause "interference" and inefficient operation.

4. *Depth of bottom valve.* — Determined by working fluid level in casing, production rate desired, and estimated decline of wells, bottom-hole pressure. Working fluid level is determined from productivity index, daily production rate, and fluid gradient.

5. *Flowing friction.*—Conservative figure to use is 0.1 lb. per sq. in. per ft., in flowing water. Oil or aerated water column will have a proportionally smaller friction loss per foot.

6. *Semiclosed installations.* — Used in small "tight" wells with high maximum closed-in bottom-hole pressure (fluid level), or any small well with maximum bottom-hole pressure sufficiently high to elevate fluid a height above bottom flow valve to created necessary pressure differential with respect to well's casing pressure and cause valve to reopen and operate. Tubing standing valve is not used in semiclosed installation. Perforated seating chamber above packer, and removable blank drop valve, if used, enables operator to unload casing annulus without unseating packer if fluid should leak through valves into annulus during a shut-in period.

7. *Auxiliary equipment recommendations.*—Test rack for testing new and removed flow valves. Gas line scrubber. Proper supply gas regulation.

8. *Payout.* Average flow-valve installation in moderately corrosive area should pay out in 1 year or less, using 10 cents per barrel saving on flow-valve operation over pumping equipment, and assuming 10 per cent depreciation and 5 per cent interest charge on difference in initial investment cost between pumping and flow-valve installation. Daily allowable of 25 bbl. is assumed. Where corrosion or sand conditions are severe, the saving per barrel using flow valves would probably be greater than 10 cents per barrel. Conversely, where compression or supply gas costs are high, the saving will be correspondingly less.

Acknowledgment

The author wishes to express his appreciation to his engineering associates who aided in gathering and criticizing the material contained herein, and especially to the production engineers in the West Texas division of the Gulf Oil Corp. for their generous cooperation.

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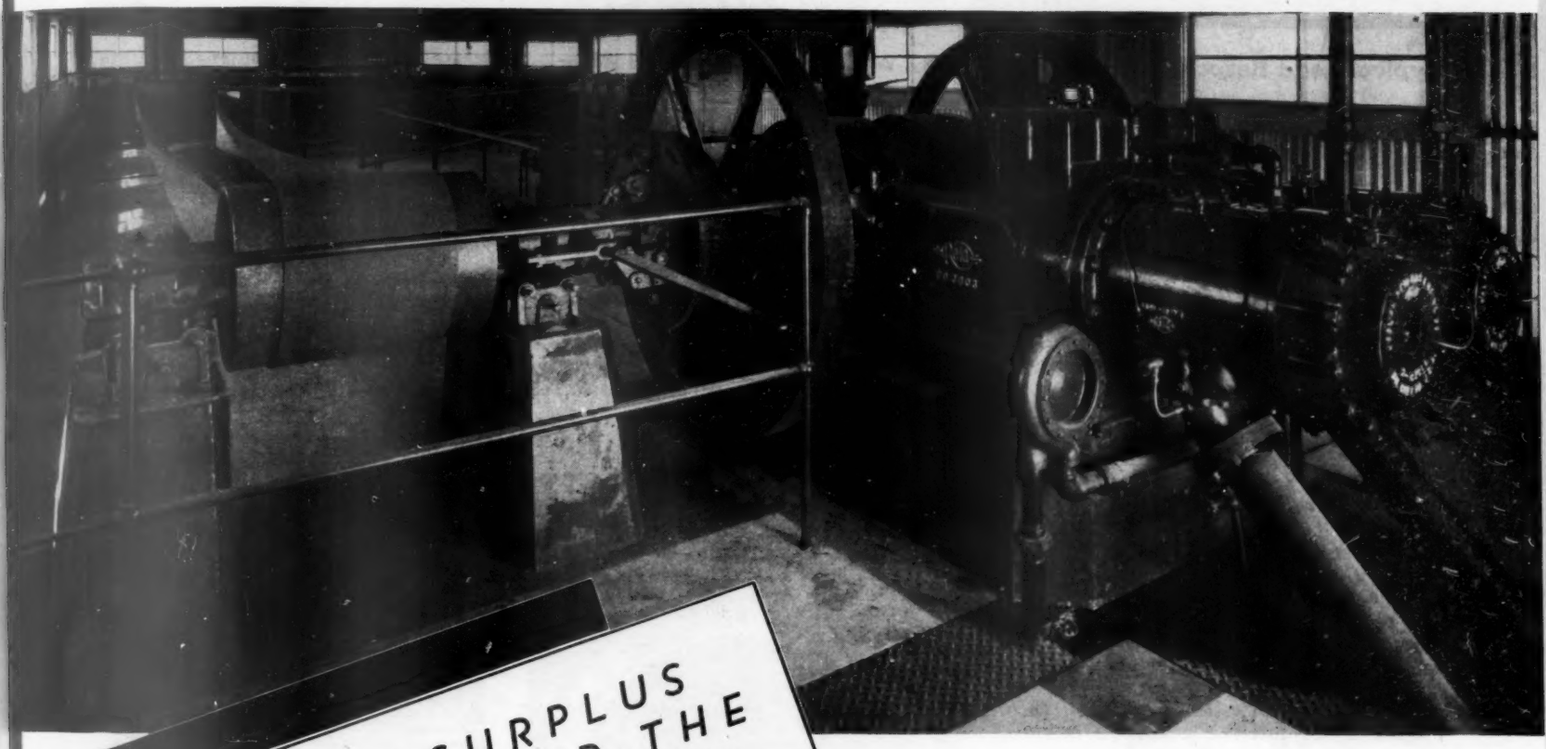

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QUESTIONS ON TECHNOLOGY

Typical Lead Responses

I am interested in knowing what is considered a high lead susceptibility for gasoline.—F. E. S., Jr.

The lead susceptibility or lead response of gasoline is complicated by the fact that it is greatly affected by the octane number of the base stock and the amount of sulfur that it contains. Nevertheless, averages of many gasolines make a fair means of comparison, and hence high susceptibilities may be taken as those that are well above the average and low susceptibility may be taken as those definitely below the average. Average lead responses, as taken from the tables shown on this page, are somewhat as tabulated in the table below (Tabulation of Average Lead Responses).

Considering the very high clear octane numbers exhibited by isooctane and Houdry base stocks, these two stocks have excellent lead responses. In part this may be due to the very low sulfur content of such stocks. Polymer gasoline is definitely low in lead response but this inadequacy is to some extent counteracted by its high blending octane number when mixed with other stocks (no lead). Lead response is so interwoven with sulfur content, type of base stock hydrocarbons and the octane number of the base stock that the effect of each of these variables can scarcely be discerned in Tables 1 to 6 that are shown on this page. For this reason the selected data are tabulated in the two tables at the bottom of this column.

The effect of the type of stock is evident in the classification used in grouping materials into Tables 1 to 6.

By W. L. NELSON, Technical Editor

Readers are invited to submit questions related to refinery technology for answer on this page.

TABLE 1—LEAD SUSCEPTIBILITY—NATURAL GASOLINE

No.	Kind of gasoline or source—	Octane No. of sample	Increase in octane number for 1 cc.	2 cc.	3 cc.	4 cc.
1.	Gray & Hutchinson Co.'s vapor rec.	71.0	4.0	7.0	8.5	...
2.	Gray & Hutchinson natural, 14 lb.	67.0	8.0	12.0	...	...
3.	Gray & Hutchinson natural, 12.5 lb.	65.5	8.5	12.5	...	...
4.	Burbank natural, 11.5 lb.	65.0	11.5	15.5	18.0	...
5.	Okla. City and W. Kans. 50-50, vapor rec. 13.4 lb.	74.6	4.4	5.4	6.4	...
6.	Special cut (No. 5)	64.1	12.7	21.0	24.1	25.6
7.	Natural, 7 lb.	60.5	9.8	17.1	21.5	23.3
8.	Natural, 13 lb.	67.2	8.5	15.3	18.4	20.0
9.	Special cut (No. 10), 56 A.P.I.	51.8	5.2	10.5	15.9	21.2
10.	Natural, 12 lb., 0.037 per cent S.	67.2	7.8	12.3	14.8	16.8
11.	Natural, 12 lb., 0.002 per cent S.	69.5	11.5	15.3	18.0	20.0
12.	25 per high octane and 75 per cent natural	79.0	7.0	11.5	13.0	14.0
13.	50 per cent high octane and 50 per cent natural	84.0	8.0	10.5	13.5	15.0
14.	26 lb.-0.005 S.	72.0	13.4	15.4	...	...
15.	18 lb.-0.005 S.	66.7	14.3	19.3	...	...
16.	13 lb.-0.10 S.	62.7	14.3	20.1	22.6	...
	Average	68.0	9.3	13.8	16.3	19.5
	Increase in octane number per cc.	...	9.3	6.9	5.4	4.9

TABULATION OF AVERAGE LEAD RESPONSES

	Average Oct. No.	Average Increase in octane number with 1 cc. lead	2 cc. lead	3 cc. lead	4 cc. lead
Natural gasoline	68.0	9.3	13.8	16.3	19.5
Straightrun gasoline	57.5	9.0	14.5	17.8	21.4
Isooctane mixes (50-50)	83.0	8.1	11.6	14.1	16.2
Cracked gasoline	65.9	5.5	9.2	10.4	...
Houdry gasoline	80.6	5.2	...	9.0	...
Polymer gasoline (catalytic)	76.8	3.2	4.7	5.2	...

Note that no claims are here made that these averages are representative of the average situation in the entire industry—but also note that in most instances a reasonably large number of gasolines were used. (See Tables 1 to 6.)

EFFECT OF SULFUR CONTENT

(Trusty Reference 1)

Material—	Per cent sulfur	Oct. No.	Increase in octane number with 1 cc.	2 cc.	3 cc.	4 cc.
Reference fuel	0	51.0	12.5	19.3	23.4	28.5
With methyl disulfide	0.39	48.9	4.1	7.3	9.8	15.6
With ethyl disulfide	0.03	50.4	9.5	15.2	19.0	25.0
With thiophene	0.105	51.0	9.5	15.4	18.8	25.3

EFFECT OF OCTANE NUMBER OF BASE STOCK

(Straightrun and isooctanes)

Material—	Oct. No.	Increase in octane number with 1 cc.	2 cc.	3 cc.	4 cc.
Item 6, Table 2	38.6	13.0	21.5	25.0	...
Item 27, Table 2	48.5	13.5	24.0	28.0	...
Item 7, Table 1	60.5	9.8	17.1	21.5	23.3
Item 14, Table 2	65.0	11.0	16.0	18.0	19.5
Item 15, Table 2	70.0	10.0	14.0	16.0	17.5
Item 16, Table 2	74.0	8.0	12.0	14.5	16.0
Average of Table 4	83.0	8.1	11.6	14.1	16.2

TABLE 2—LEAD SUSCEPTIBILITY—STRAIGHTRUN GASOLINE

No.	Kind of gasoline or name of crude oil	Octane No. of gasoline	Increase in octane number for 1 cc.	2 cc.	3 cc.	4 cc.
1.	Caddo light—La.	...	8.2	14.0	...	...
2.	Haynesville—La.	...	8.5	13.0	17.0	...
3.	Gray & Hutchinson, 67 A.P.I.	59.5	9.0	14.5	18.5	...
4.	Gray & Hutchinson, 60.5 A.P.I.	48.0	6.5	12.0	16.0	...
5.	Okla. City and W. Kans. 50-50, 59.5 A.P.I.	58.0	10.5	15.0	17.0	...
6.	Okla. City and W. Kans. 50-50, 54.5 A.P.I	38.6	13.0	21.5	25.0	...
7.	Gulf Coast	62.1	10.2	19.1	22.5	24.0
8.	Oklahoma	45.2	9.1	16.2	21.9	26.1
9.	Pennsylvania	50.0	8.3	15.3	20.3	23.4
10.	Kansas	44.7	8.3	14.4	19.0	22.1
11.	Panhandle	50.0	7.8	14.0	18.3	21.6
12.	Mid-Continent (0.026 per cent S.)	58.5	10.0	15.0	18.3	20.9
13.	Mid-Continent (0.003 per cent S.)	59.5	13.9	19.0	21.1	23.0
14.	65 Oct. straightrun	65.0	11.0	16.0	18.0	19.5
15.	70 Oct. straightrun	70.0	10.0	14.0	16.0	17.5
16.	74 Oct. straightrun	74.0	8.0	12.0	14.5	16.0
17.	79.3 A.P.I.-0.466 S	65.0	5.5	8.5	10.5	...
18.	79.3 A.P.I.-No RSH	67.0	6.7	10.7	12.4	...
19.	68.2 A.P.I.-0.192 S	45.5	7.0	11.5	15.5	...
20.	68.7 A.P.I.-0.018 S	60.5	10.0	15.0	18.0	...
21.	64.9 A.P.I.-0.033 S	53.0	10.5	16.5	20.0	...
22.	62.6 A.P.I.-0.112 S	63.5	8.0	11.5	14.0	...
23.	64.9 A.P.I.-0.09 S	62.0	6.5	11.0	13.5	...
24.	59.4 A.P.I.-0.115 S	43.5	8.0	13.5	17.0	...
25.	64.5 A.P.I.-0.064 S	70.5	8.0	11.5	13.5	...
26.	Ave. of No's. 17-25, 0.136 S	57.9	8.0	12.4	15.3	...
27.	Rodessa-325 E. P.-0.005 S	48.5	13.5	24.0	28.0	...
28.	East Texas-360 E.P.-0.01 S	61.5	12.0	19.0	20.5	...
29.	California-435 E.P.-0.29 S	62.5	6.5	10.0	12.5	...
	Average	57.5	9.0	14.5	17.8	21.4
	Increase per cc.(Ave.)	...	9.0	7.2	6.6	5.3

TABLE 3—LEAD SUSCEPTIBILITY—CRACKED GASOLINE

No.	Kind of Gasoline or name of Crude Oil	Octane No. of Sample	Increase in Octane Number for 1 cc.	2 cc.	3 cc.	4 cc.
1.	Kansas	62.6	7.8	12.3	15.3	17.8
2.	Panhandle	58.5	6.2	10.5	14.1	16.9
3.	Okmulgee	67.0	...	14.4	...	...
4.	Gray & Hutchinson Co.'s from naphtha	61.0	7.5	11.5	14.0	...
5.	Gray & Hutchinson Co.'s from gas oil	60.5	7.5	11.5	13.5	...
6.	Gray & Hutchinson from topped crude	61.5	6.0	9.0	12.0	...
7.	Okla. City-Dubbs	62.5	6.0	9.0	12.0	...
8.	Okla. City & W. Kans. 50-50, from gas oil	55.4	10.0	14.5	17.0	...
9.	Okla. City & W. Kans. 50-50 from recycle	63.7	7.3	10.8	12.3	...
10.	Okla. City & W. Kans. 50-50 Dubbs	65.7	7.3	10.3	12.3	...
11.	Sulfur added, 0.086%	60.6	7.4	10.7	12.9	14.6
12.	Sulfur removed, 0.072%	62.6	8.0	11.2	13.4	14.6
13.	57.9 A.P.I.-0.217 S	63.0	5.5	7.5	9.0	...
14.	59.3 A.P.I.-0.164 S	63.0	5.5	8.5	11.0	...
15.	77.9 A.P.I.-0.292 S	75.5	2.5	...	5.0	...
16.	62.5 A.P.I.-0.282 S	70.5	4.5	6.0	7.5	...
17.	61.1 A.P.I.-0.062 S	62.5	7.0	10.5	12.5	...
18.	54.7 A.P.I.-0.83 S	70.0	2.0	...	4.5	...
19.	57.8 A.P.I.-0.137 S	72.0	2.0	3.5	...	...
20.	51.3 A.P.I.-0.352 S	64.5	5.0	7.5	9.0	...
21.	57.9 A.P.I.-0.128 S	65.0	6.0	8.0	10.0	...
22.	59.3 A.P.I.-0.067 S	66.0	6.0	9.5	11.5	...
23.	55.9 A.P.I.-0.303 S	70.0	2.5	5.5	6.5	...
24.	57.4 A.P.I.-0.084 S	59.5	7.0	10.5	13.5	...
25.	56.6 A.P.I.-0.645 S	69.5	2.5	...	6.0	...
26.	60.1 A.P.I.-0.305 S	67.5	4.0		8.0	...
27.	59.8 A.P.I.-0.135 S	70.0	5.0	7.0	9.0	...
28.	57.1 A.P.I.-0.239 S	70.0	4.0	6.5	7.5	...
29.	54.4 A.P.I.-0.186 S	68.0	5.0	...	9.5	...
30.	Reformed 52.7 A.P.I.-0.13 S	69.0	6.0	9.0	10.0	...
31.	Ave. of No's. 13-29-0.261 S	67.4	4.5	6.9	8.5	...
32.	Cal.-402 E.P.-0.09 S	66.0	7.0	9.5	...	...
33.	59 A.P.I.-390 E.P.-0.07 S	63.0	5.5	8.5	11.0	...
34.	56 A.P.I.-435 E.P.-0.30 S	70.0	2.5	5.5	6.5	...
35.	Reformed 396 E.P.	69.0	6.0	9.0	10.0	...
	Average	65.9	5.5	9.2	10.4	...
	Increase per cc.(Ave.)	...	5.5	4.6	3.4	...

(Continued on Page 70)

Carburization of Cracking-Still Tubes During Service

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This is the second of several articles by the author. The first appeared in the issue of October 2, and the next will appear in an early issue.

CERTAIN cracking-still tubes which were returned to our laboratories for examination after service have been found to be carburized on the inner wall. Since this condition is thought to occur more frequently than commonly supposed, it is believed advisable to call it to the attention of those interested as it does have an influence on the physical characteristics of the tube.

While this condition has been observed with a wide variety of analyses and many different cases could be quoted, the present discussion will be confined to three typical steels. Those chosen for this purpose are 5 Cr Mo, a steel in extensive use for cracking-still service; 7 Cr Mo steel which is now rapidly coming into use; and an austenitic 18-12 + Cb steel. These steels had the following composition:

Type—	Carbon	Manganese	Silicon	Chromium	Molybdenum	Nickel	Columbium
5 Cr Mo	0.13	0.38	0.32	5.18	0.54	0.20	...
Sicromo 7	.09	.45	.74	6.70	.45	....	...
18-12 + Cb	.07	1.66	.65	18.25	...	12.72	0.70

Sicromo 7 differs from the 7 Cr Mo grade of steel in that it contains an increased silicon content, which improves the oxidation and corrosion resistance.

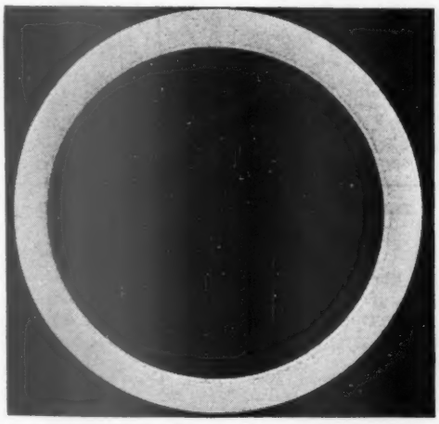

Fig. 1—Macrosection of Sicromo 7 tube with carburized ring on inside diameter

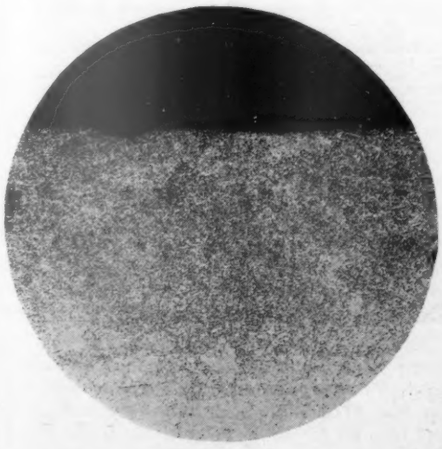

Fig. 2—Macrosection showing degree of carburization on inside diameter

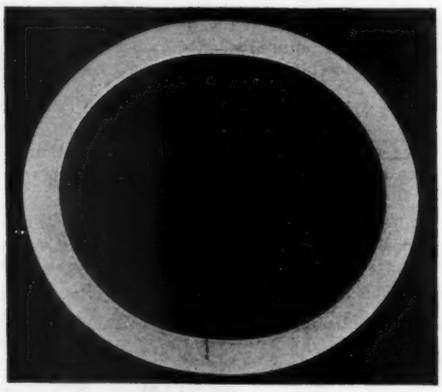

Fig. 3—Flattening test on carburized ring

Sicromo 7 Carburized Tube

Fig. 1 shows a macro-etched ring of this steel which had been in service for a total time of 8,200 hours. According to the information submitted, the wall temperature for most of the time was below 1,200° F. although it did attain a temperature of 1,330° F. for 1 day only. This tube was not removed from service because of failure but solely for a metallurgical examination.

This etched ring shows evidence of carburization on the inner wall and the photomicrograph of Fig. 2 reveals carbon penetration to a depth of 0.025 in. The effect of this carburized layer on the flattening characteristics is well demonstrated by Fig. 3. Under slight deformation a crack occurred in the carburized area and spread into the wall proper.

That this cracking during the flattening test is due to the carburized inner wall is substantiated by Fig. 4. This ring was cut adjacent to the one shown in Fig. 3 and after this carburized layer was removed by machining, the ring could be completely flattened without the appearance of any defects.

Room-temperature Izod impact tests were conducted on specimens taken completely around the tube's circumference with the notch being at the inside wall, the radius and the outside wall, with the following results:

Location—	Izod impact resistance, ft.-lb. Notch ID	Notch radius	Notch OD
1	73	90	103
2	93	64	103
3	76	96	78
4	72	77	76
5	83	78	65
6	65	64	107
7	88	78	83
8	68	67	90
9	104	94	98
10	67	77	87
11	78	67	99
12	66	74	80
13	85	104	99
14	88	99	71
15	94	107	106
16	95	94	93
Range	65-104	64-107	65-107

Note: Specimens were taken completely around tube circumference. No. 1 is directly at fire side of tube and No. 9 directly opposite.

All of the impact values were of a high order of magnitude and were not influenced by the position of the specimen with respect to the circumference or by the location of the notch. As will be shown later the retention of high shock resistance in carburized tubes is not always the case and in this particular instance it may be due to the relatively slight carburized layer having been removed during the machining of the specimens.

Charpy tests were conducted at 1,200° F., so as to determine the shock resistance at the operating temperature, with the following results:

Location—	Charpy impact, ft.-lb.
Fire side	51, 50, 52
Opposite fire side	53, 52, 53

Again the carburized layer has not had a detri-

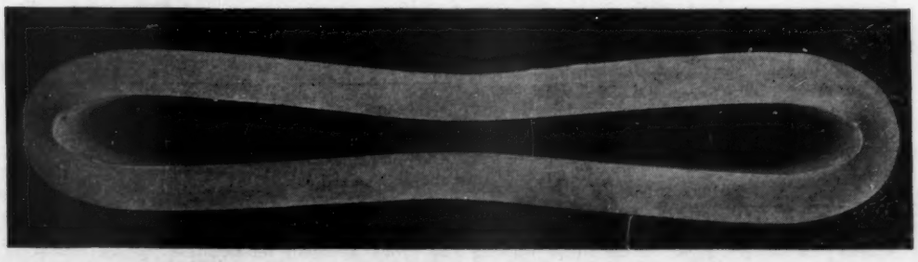

Fig. 4—Flattening test after removal of carburized inside diameter layer

mental effect on the impact resistance but, as before, this may be due to this layer having been removed during the machining of the specimens.

5 Cr Mo Carburized Tube

Fig. 5 is a macro-etched ring cut from a 5 Cr Mo tube which had been in service for 10,420 hours. The operating conditions were reported to be as follows: The individual runs ranged up to 1,400 hours and during one of these the center section of the tube attained a temperature of 1,500° F. for 4 days prior to shutdown. In the majority of the runs, however, the temperature at the hottest portion of the tube did not exceed 1,300° to 1,350° F.

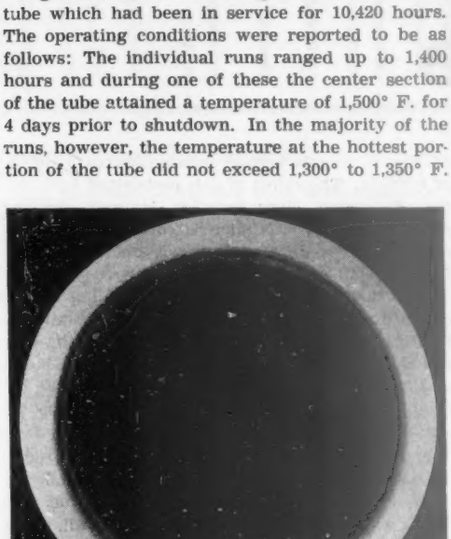

Fig. 5—Macrosection of 5 Cr Mo tube showing heavy carburized ring on inside diameter

From Fig. 5 it is evident that the carburization on the inner wall of the tube is much more severe than with Sicromo 7, and the dense layer of coke is still present. In the flattening test this section cracked under very little deformation, with the crack extending completely through the tube wall.

Tensile tests, using 0.375-in. diameter by 1½-in. gage-length specimens, were conducted on this carburized tube as well as on a similar tube from a cooler section of the furnace. These results, together with those obtained from Charpy and Izod tests, are as follows:

Designation	Location—	Tensile strength	Yield point	Elongation, %	Reduction of area, %	Charpy impact	Izod impact Notch OD	Izod impact Notch Rad.	Izod impact Notch ID
A	Fire side	71,500	33,700	36.5	75.8	43	84	80	84
	Opposite fire side	70,800	34,900	36.7	75.4	43	87	90	101
B	Fire side	66,000	30,500	32.5	58.1	35	40	10	12
	Opposite fire side	69,700	34,900	37.0	74.2	41	43	34	49

A—Tube not carburized. B—Tube carburized.

These results show the uncarburized tube to have a very satisfactory combination of strength, ductility and impact resistance. The Izod impact resistance of the carburized tube is, however, greatly decreased. The ductility characteristics on the fire side, and especially the reduction of area value, are likewise reduced.

Charpy impact tests were likewise conducted at 1,200° F. on the carburized tube with the following results:

Location—	Charpy impact (heated 1 hour) OD	Charpy impact (heated 1 hour) Rad.	Charpy impact (heated 1 hour) ID	Charpy impact (heated 24 hours) OD	Charpy impact (heated 24 hours) Rad.	Charpy impact (heated 24 hours) ID
Fire side	40	31	44	38	34	43
	35	31	41	39	37	41
Opposite fire side	47	44	49	52	42	46
	44	44	51	48	46	46

Carburization had little influence on the shock resistance at 1,200° F. but this again may be due to the carburized layer having been largely removed during the machining or notching of the specimens.

18 Cr — 12 Ni + Cb Carburized Tube

A heavy carburized layer on the inner wall at the fire side of an 18-12 + Cb tube is shown in Fig. 6. Little, if any, carburization is visible opposite the fire side but this does not necessarily indicate that carbon penetration is absent in this section. Austenitic steels, of which this is an example, have a greater carbon solubility than do

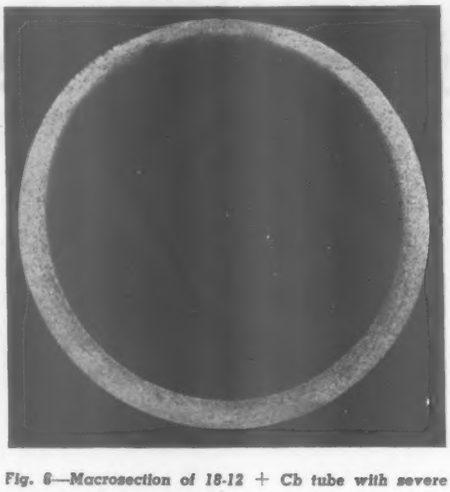

Fig. 6—Macrosection of 18-12 + Cb tube with severe carburized layer on inside diameter at fire side

pearlitic steels, and consequently greater carbon penetration must occur before it can be detected in a macrosection.

This particular tube was in service only 530 hours before failure occurred. The outlet oil temperature was of the order of 1,080° F., but this tube was located directly above the fire wall and there is evidence that the metal temperature, at the section of failure, was about 1,580° F. Failure was, therefore, due to an overheated condition.

Conclusions

The results obtained from the examination of these three tubes, as well as many others, permit the following conclusions:

1. Carburization occurs on the inner wall, and especially at the fire side, of cracking-still tubes during service much more often than commonly supposed.

2. Even when this carburization is relatively slight the tube may appear to be brittle as it may crack under slight deformation in the flattening test.

3. When the degree of carburization is more pronounced, the room-temperature impact resistance and the ductility may be considerably decreased.

4. The Charpy impact resistance at 1,200° F., a representative metal-operating temperature, does not appear to be influenced detrimentally by the carburized layer.

5. It is recommended that when tubes are carburized on the inner wall they not be subjected to shock at room temperature, as by removing coke with a mechanism of the knocking type.

Questions on Technology

(Continued from Page 68)

TABLE 4—LEAD SUSCEPTIBILITY—ISOOCTANES

No.	King of Gasoline or Source	Octane No. Clear	Increase in Octane Number for 1 cc.	2 cc.	3 cc.	4 cc.
1.	50-50 tech. isooctane and avia. base stock	85.2	9.4	11.9	13.9	...
2.	50-50, but isooctane by H_2SO_4 polymerized	84.8	9.8	12.2	13.9	...
3.	50-50, 100 isooctanes with 65 oct. st. run	81.0	8.0	11.5	14.0	15.5
4.	50-50, 100 isooctane with but 70 oct. st. run	83.5	8.0	12.0	14.5	...
5.	50-50, 100 isooctane with but 74 oct. st. run	84.5	7.5	12.5	15.5	...
6.	50-50, 95 isooctane with 65 oct. No. st. run	80.0	7.0	10.5	13.0	15.5
7.	50-50, 95 isooctane with but 70 oct. No. st. run	82.0	7.5	11.5	14.0	16.5
8.	50-50, 95 isooctane with but 74 oct. No. st. run	83.5	7.5	11.0	14.0	16.5
Average for 50-50 mixes		83.0	8.1	11.6	14.1	16.2
Increase per cc., avg.		...	8.1	5.8	4.7	4.0

TABLE 5—LEAD SUSCEPTIBILITY—HOUDRY CATALYTIC

No.	Kind of Gasoline or Source	Octane No. Clear	Increase in octane number for 1 cc.	2 cc.	3 cc.	4 cc.
1.	East Texas gas oil	80.9	5.3	...	9.2	...
2.	Mixed stocks	78.0	5.5	...	9.5	...
3.	Mixed stocks (1939 Research oct. No.)	85.2	7.4	...	11.3	...
4.	Mixed stocks (1939 Research oct. No.)	91.2	3.6	...	7.2	...
5.	Cal. high S.	78.0	4.7	...	7.4	...
6.	E. Venezuela g. oil	79.4	..	...	9.9	...
7.	Red. Ill. crude	89.3	3.6	...	5.7	...
8.	Mirando crude	80.7	3.8	...	8.5	...
9.	E. Texas red. crude	79.8	3.1	...	5.1	...
10.	Untreated	77.5	6.5	9.1	11.0	...
11.	Acid treated and re-run	78.0	7.0	10.2	12.7	...
12.	Houdry V.P. treated	79.2	6.8	9.4	10.8	...
13.	Houdry L.P. treated	77.4	7.3	9.8	11.4	...
14.	E. Texas red. crude	77.8	4.4	6.5	7.5	...
15.	W. Texas Red. crude	77.0	4.1	6.3	7.4	...
Average		80.6	5.2	...	9.0	...
Increase per cc., avg.		...	5.2	...	3.0	...

TABLE 6—LEAD SUSCEPTIBILITY—CATALYTIC POLYMER

No.	Kind of Gasoline or Source	Octane No. Clear	Increase in octane number for 1 cc.	2 cc.	3 cc.	4 cc.
1.	75.8 A.P.I.-414 E.P.-0.47 S	70.0	5.0	7.0	8.5	...
2.	71.1 A.P.I.-414 E.P.-0.138 S	82.5	1.5	2.5	2.0	...
Average		76.8	3.2	4.7	5.2	...
Increase per cc., average		...	3.2	2.4	1.7	...

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Dates for Gas-Measurement Course

At a meeting of the general committee held recently in Dallas, Tex., dates for the 1942 Southwestern Gas-Measurement Short Course were set for April 21-23, at Norman, Okla. Previously dates had been set for earlier in April, but it was found that the dates conflicted with those of the Midwest Gas Association, Sioux City, Iowa, so the change was effected.

Pipe-Line Activity

Texas Pipe Line Starts Work on Apache Line

Work started at the beginning of this week for the construction of a 101-mile 8-in. crude-oil line from the recently opened field at Apache, Okla., to Seminole, Okla. Already 30 miles of pipe has been delivered; another 30 miles is due to be delivered in the near future. Arrangements have been made to have pipe deliveries arrive at a rate which will make it possible to complete the line by February 1. Contract for construction has been awarded to Black Construction Co.

Gasoline Pipe Line Along Burma Road Is Considered

Plans for laying a pipe line along the 700-mile Burma Road to supply gasoline for China's growing war machine were disclosed by the arrival of John H. Hall, American oil-company engineer, at Chungking, China.

Mr. Hall started south along the road on a survey to determine whether the pipe line could be built. Accompanying him is Madison Hall of Baltimore, Md., who is investigating the advisability of asphalt surfacing of the road.

Pipe-Line Shipments of Products Break Records

Not only was pipe-line transportation of gasoline far larger in the first 7 months of 1941 than in the corresponding 1940 period, but July apparently witnessed largest volume turned into lines of any month in history.

Motor fuel turned into lines in the first 7 months totaled 63,094,000 bbl., against 52,909,000 bbl. in the first 7 months of 1940. In July the total was 9,996,000 bbl., against 9,882,000 bbl. in June and 8,634,000 bbl. in July 1940.

Motor fuel delivered from lines in the first 7 months totaled 62,594,000 bbl., against 52,561,000 bbl. in the first 7 months of 1940; and for July 10,494,000 bbl., against 9,685,000 bbl. in June, and 8,762,000 bbl. in July 1940.

Stocks in lines and working tanks at the end of the month totaled 5,301,000 bbl., against 5,867,000 bbl. a month earlier and 5,198,000 bbl. a year earlier.

Gulf Approaches Completion of Pipe-Line Looping Program

Only one of the 13 loops remains to be laid to complete the program of Gulf Refining Co., Tulsa pipe-line division, for the construction of 202 miles of 10-in. loops between Glenn Pool, Oklahoma, and Dublin, Ind. The unfinished 19-mile loop lies between Steelville Station, Mo., and the Mississippi River. Delay has been caused by difficulty in stringing pipe due to the muddy ground; 4 miles have been strung to date. It is expected that construction will be finished some time in December.

In order to fully utilize the additional capacity provided by the loops which the company has been laying in recent months, it will be necessary to complete the pumping station which is now under construction at State Line, Ind. Construction of the station has proceeded as far as it can before the delivery of equipment. The station will be equipped with a 350-hp. diesel engine which will drive a centrifugal pump. The station will increase the capacity of the line to the Buckeye Pipe Line system at Adgate station, Ohio, by 3,000 to 4,000 bbl. This will bring the capacity of the line from 26,000 to nearly 30,000 bbl.

The capacity of the line between Dublin, Ind., and Cincinnati, Ohio, has been increased 3,000 to 4,000 bbl. by the looping with 20 miles of 8-in. near Cincinnati.

Memphis Natural Adds Loops

Memphis Natural Gas Co. will soon complete three loops that will parallel its present pipe line from Monroe gas field in northern Louisiana to Memphis, Tenn. They will cost $1,200,000.

Humble Pipe Line Reduces Rates

Humble Pipe Line Co. has announced a flat reduction of 2½ cents per barrel in transportation rate on its system in Texas and New Mexico and from these points to Baton Rouge, La., effective December 1. New rate schedules were being sent out during the week and they apply to virtually all the oil handled by the company—some 140,000,000 bbl. a year.

Request has been made by Humble Oil & Refining Co. for permission from Texas Railroad Commission to abandon its pipe line from Charco Redondo field, Zapata County, Texas. Humble engineers testified that it had operated at a loss of 50 cents per barrel some of the years.

Nine Conspirators Found Guilty in Pipe-Line Bombing

SPRINGFIELD, Ill., Nov. 24.—Nine persons—eight men and one woman—were found guilty last week in Macon County Circuit Court at Decatur, Ill., of conspiracy in connection with bombing the Texas Empire Pipe Line Co.'s line near Decatur on February 9, 1940.

The defendants, four of whom were business agents for labor unions, face prison terms specified by a jury of from 1 to 5 years. Only two of the defendants were excepted from prison terms, but the latter can be sent to jail, fined or both.

In addition to fines of $2,000 each for four conspirators, fines of $1,000 each were assessed against three others.

The trial, which lasted 3 weeks, featured testimony from a number of witnesses, including agents of the federal Bureau of Investigation. The witnesses testified a secret union "slush fund" was created without the knowledge of the union membership to finance the bombing.

The pipe line was dynamited at a spot near the village of Boody, 5 miles south of Decatur, as the outgrowth of a labor dispute. Prosecution was directed by State's Attorney Ivan Hutchens, who said he would oppose appeals from the convicted defendants.

Sohio Considers Laying Line From Tinsley, Miss., Field

Consideration is being given by Sohio Pipe Line Co. to plans for laying a 170-mile crude-oil pipe line from the Tinsley field, Mississippi, to a point near Memphis, Tenn. Several weeks ago, Standard Oil Co. of Ohio, parent company of the Sohio organization, exercised an option to purchase Southern Pipe Line Co.'s system connecting with wells in the Tinsley field.

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Book Department

THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

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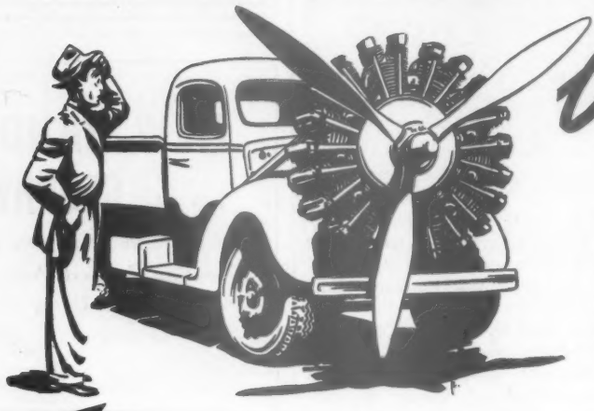

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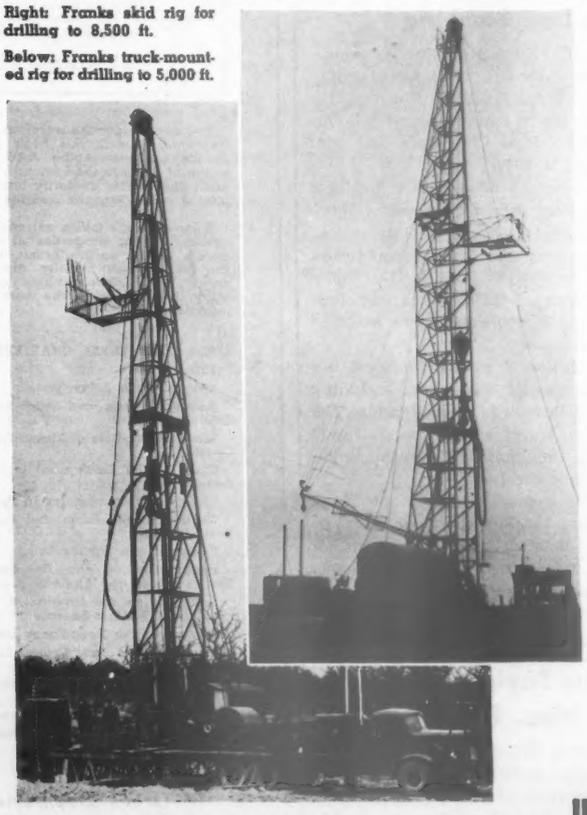

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FIELD DEVELOPMENTS...

HIGHLIGHTS FROM THE WEEK'S NEWS—

Completions remained near the 600-well level with a decline of 17 to 593. Oil wells were up 5, gas wells down 11 and dry holes down 11.

The week's activities include the normal more-or-less routine discoveries and extensions. During the past 2 years, discoveries have averaged about five per week but the great majority of these discoveries are of little importance. The importance of a discovery is not, of course, judged by the size of the discovery well, but by the influence it has upon future activity. Thus a well finding production in a new sand or in a location remote from known production may be of major importance even though it is not itself a commercial producer.

The recent discoveries which are leading the way into virgin fields have been reported on this page and some of the results of these discoveries are already apparent. The Raisin City discovery in California, the Lubbock discovery in West Texas and the Kearny County, Kansas, Pennsylvanian sand find have all started a series of wildcats. The Helm field, which appears to be larger than Raisin City has intensified the play north of the old San Joaquin Valley fields.

In Oklahoma, the pushing out of production into the Anadarko basin by the discovery of Apache may now be intensified by the discovery of Simpson sand in Barber County, Kansas, on the north rim of the basin. This latest development indicates that Simpson sands may underlie the whole eastern part of the basin, and structures may yield important production, particularly since Oklahoma City and other eastern rim fields found much Wilcox and Simpson oil.

This week two new outposts are added to the list. Extension of Delaware sand production far south and west of other West Texas production may lead to a play all along the west flank of the Fort Stockton high and its extension into New Mexico. In Illinois, a new field has been opened up about 30 miles north of important production in the Aux Vases sand. This sand has come into the limelight farther south but recognition was delayed by reason of the fact that showings, even in wells which later proved good producers, were not apparent until the formation was tested.

WEST TEXAS: Delaware sand, which produces in Loving and western Ward counties, is showing oil in a wildcat southwest of Fort Stockton in Pecos County. This test which is far south and west of other production may open an extensive play. Wildcats in the northern part of the basin continue to show encouraging results as a show is logged in a well 3½ miles from the Lubbock discovery, and Albaugh's Dawson County test is swabbing oil (p. 81).

KANSAS: Discovery of Simpson in Barber County near Lake City and in a Rice County wildcat is reported. Another Simpson showing is reported in a Pawnee County wildcat which also reports Lansing-Kansas City oil. A Bartlesville sand pool is in prospect in Cowley County (p. 91).

INDIANA: One of the best wells drilled in the state is swabbing 1,100 bbl. from Waltersburg and Cypress sands near Mount Vernon. A showing is reported in the Waltersburg in Vanderburg County, the Salem may provide a new pay at Hazleton and Gibson County has a new McClosky pool (p. 78).

COLORADO: A wildcat in Kit Carson County on which an immediate start is planned is of more than average interest because it is near an old test in which shows of oil were found in a lower Pennsylvanian sand. Sands of approximately this age were the principal pays in Lance Creek and are also producing in western Kansas in Stanolind's Kearny County strike (p. 97).

ILLINOIS: The importance of Aux Vases production is stressed by planned development of that sand in the Johnsonville pool and the discovery of a new field north of Mattoon. This new pool is the farthest north in the basin play. As new McClosky production is reported in the Clay City-Dundas area, the plugging back of a number of McClosky wells in Noble and Clay City with recompletion in the Weiler (Cypress) sand is under way (p. 85).

TEXAS GULF COAST: Polk County's Cockfield sand pool opener gaged 140 bbl. The prospective opener of Montgomery County's third Wilcox pool in Fostoria district is testing. Hopes that North La Ward and Maurbro would be linked were dashed by an abandonment northeast of the North La Ward discovery. The field is also thought to be defined on the southeast (p. 87).

LOUISIANA GULF COAST: Old domes continue to hold the spotlight as East Hackberry joins the list of those on which deep flank production has been obtained. After many tests had been drilled on the northeast flank, and deep production had been found down to 9,200 ft., a new Oligocene pay was picked up below 11,000 ft. Jennings deep flank production has been extended. A dry-gas field has been opened in the Delta district, Plaquemines Parish (p. 80).

SOUTHWEST TEXAS: Flank oil production on the Agua Dulce-Stratton structure received an important extension from a well southwest of the former field in what is believed to be a new pay. A new gas field in Jim Hogg County and a new oil field near Mirando City are the week's prospects (p. 89).

MONTANA: A new productive area has been opened north of Cut Bank and south of North Cut Bank (p. 97).

NORTH TEXAS: A new pay zone for the district is in prospect as a Montague County test is producing from the Viola limestone. This formation is productive in southern Oklahoma fields and its discovery on the Texas side of the Red River emphasizes the geological similarity of the two areas, despite the much steeper structures found in Oklahoma (p. 95.)

NORTH LOUISIANA: The Pettit lime has provided a new pay for the Haynesville pool. The Rapides Parish Wilcox test which is still testing with an excessive amount of water showing penetrated the full thickness of the series and entered the Midway. The Wilcox is 3,050 ft. thick at this point (p. 76).

EAST TEXAS: New orders governing salt-water disposal wells in the East Texas field have been announced by the Railroad Commission, effective January 1. The proposals plan to benefit owners of leases on which these wells are located but some operators claim that these benefits should be increased (p. 84).

COMPLETIONS IN ALL FIELDS . . .

(Week Ended November 22, 1941)

	Oil	Gas	Dry	Total	1941 total comp. to date	1940 total comp. to date
N. Y., Pa., and W. Va.	92	21	4	117	5,352	5,005
Ohio	1	11	14	26	1,532	1,364
Indiana	4	0	6	10	461	407
Kentucky	5	2	2	9	606	525
Illinois	52	0	13	65	3,286	3,437
Michigan	9	4	5	18	820	1,038
Kansas	22	0	11	33	1,935	1,672
Nebraska	0	0	1	1	76	40
Missouri, Iowa	0	0	0	0	33	34
Oklahoma	22	2	9	33	1,685	1,697
Texas:						
North Central Texas	32	1	20	53	2,464	2,521
West Texas	55	0	1	56	2,041	1,686
Texas Panhandle	17	2	2	21	617	505
Eastern Texas	11	0	4	15	944	564
Texas Gulf Coast	11	1	1	13	972	1,075
Southwest Texas	20	1	12	33	1,685	1,896
Total Texas	146	5	40	191	8,723	8,247
North Louisiana	8	2	8	18	700	603
Louisiana Gulf Coast	20	0	8	28	779	910
Total Louisiana	28	2	16	46	1,479	1,513
Arkansas	2	2	0	4	180	152
Mississippi and Southeast	4	0	1	5	251	181
Montana	1	4	2	7	265	218
Wyoming	5	0	0	5	161	151
Colorado	0	0	1	1	29	16
New Mexico	1	0	3	4	250	557
California	16	1	1	18	1,006	916
Total United States	410	54	129	593	28,130	27,170
Total previous week	405	65	140	610		
Week ended Nov. 23, 1940	335	55	116	506		

CALIFORNIA FIELD REPORT

Development to Be Centered Around Recent Discoveries

By L. P. STOCKMAN

LOS ANGELES, Calif., Nov. 24.—The California Stripper Well Association which recently asked governmental officials to permit higher crude-oil prices in California has been advised that an early investigation of existing crude-oil prices will be made by the Office of Price Administration in cooperation with the Office of the Petroleum Coordinator. The association has been advised by the price administrator that the Mid-Continent investigation now under way will be extended.

The Stripper Well association's report to Leon Henderson called attention to the rapid rise in production costs reflected by the United States wholesale commodity index without corresponding increases in crude-oil prices. It also pointed out that such a disparity could lead to premature abandonment of hundreds of stripper wells with the possible resultant loss of millions of barrels of crude-oil reserves now vitally needed for national defense.

● SUMMARY OF COMPLETIONS ●

	No.	Bbl.	Footage
Oil wells: San Joaquin Valley	7	8,546	50,888
Coastal district	6	6,399	33,107
Los Angeles Basin	3	1,346	12,933
Gas wells: Rio Vista	1	.....	4,226
Dry holes: Rio Vista	1	.....	6,815
Total	18	.....	107,969

Many stripper operators are unable to meet rising production costs and consequently are faced with the prospect of shutting down. The association has been advised by Mr. Henderson, "The California investigation will doubtless follow that of the Mid-Continent, which will cover analysis of data submitted by the producers and studies of the cost of producing crude oil. Basic considerations and the role of petroleum in national defense will also be explored." When this investigation begins, the Oil Producers Agency of California will submit a complete survey which it is compiling from reports received from numerous producers. In addition it is quite likely that a number of small independent refiners will also contribute a report outlining the reasons for the shutdown of many small refiners.

Any substantial increase in crude-oil prices will obviously necessitate an adjustment in gasoline prices as well as the price of fuel oil. This latter angle is a factor of great importance and must be given careful consideration when an adjustment is made in crude-oil prices because many refiners and marketers have voluntarily given employes salary increases to meet the increased cost of living. An upward adjustment is justified in both crude and refined-oil prices especially in view of the higher wholesale commodity index and the small differential that exists between crude and refined-oil prices. This small differential has practically forced small independent refiners out of the market as was pointed out at the first meeting of the Garland committee in San Francisco.

New Wells Scheduled for Shafter, Jacalitos, and Raisin City

Drilling operations in California have slowed down within the past 2 weeks but this is a natural development and usually occurs about this time each year. This results from the depletion of budgets set up for each year for drilling operations as it generally happens that many operators are forced to undertake additional drilling that was not anticipated when the budgets were set up. In addition to this some operators have already complied with drilling operations as prescribed by leases and they accordingly postpone additional drilling until next year or severely reduce the scope of work.

The new fields opened up within the past few months will come in handy in 1942 because there is a very decided shortage of favorable drilling locations in older fields. Rio Bravo, Ten Section, Greeley, Canal, Coles Levee, and Wilmington fields are quite well developed and new locations in these areas are rather scarce. Continental Oil Co. is starting a second well in the Shafter field of Kern County, and Wilshire Oil Co. is making plans to start immediate work on a second well in the new Jacalitos field of Fresno County. Additional work is also under way or scheduled for the immediate future in the Raisin City field of Fresno County and Continental is starting a new well in the recently discovered Turnbull Canyon field of Los Angeles Basin. Santa Maria Valley will probably also come in for additional drilling in 1942.

AVERAGE DAILY PRODUCTION

	Nov. 22	Nov. 15
Wilmington	87,125	86,740
Midway-Sunset	46,010	50,475
Coalinga	45,750	49,525
Kettleman North Dome	39,675	38,375
Long Beach	38,875	38,575
Ventura Avenue	37,150	38,725
Huntington Beach	28,590	28,900
Dominguez	24,975	22,710
Santa Fe Springs	23,250	23,450
Santa Maria Valley	21,010	21,850

SAN JOAQUIN VALLEY COMPLETIONS

Buena Vista Hills, Kern County: Standard 91-11-D fee, 11-32s-24e, pumped 37 bbl., 27-gravity, 3 per cent cut, T.D. 2,710 ft., perf. 2,638-2,709 ft., completed in Etchegoin formation of Pliocene age.

Edison, Kern County: Jergins Oil Co. 13-4 fee, 13-30s-29e, pumped 285 bbl., 19.5-gravity, 10 per cent cut, T.D. 1,513 ft., top Chanac 1,392 ft., Santa Margarita 1,454 ft., top basement schist 1,507 ft., bottomed in schist 1,513 ft., completed in Chanac and Santa Margarita oil sands.

Greeley, Kern County: Standard 11-29 Kern County Land, 17-29s-26e, flowed 3,041 bbl., 34.9-gravity, 0.5 per cent cut, 2,838,000 cu. ft. gas, 34/64-in. bean, pressures 1,210/1,425 lb., T.D. 11,510 ft., 60-mesh perf. 11,337-11,508 ft., completed in Rio Bravo oil sand 11,296 ft., and Vedder oil sand 11,340-11,510 ft., both oil formations are of Miocene age.

Kettleman North Dome, Kings County: K.N.D.A. 83-28-Q, 28-22s-18e, flowed 993 bbl., 38.1-gravity, 0.6 per cent cut, 780,000 cu. ft. gas, 128/64-in. bean, pressures 100/425 lb., T.D. 7,765 ft., perf. 7,691-7,760 ft., completed in Temblor of Miocene age.

Standard 85-13-P fee, 13-22s-17e, flowed compressor 1,596 bbl., 38.4-gravity, 1 per cent cut, 640,000 cu. ft. not formation gas, 56/64-in. bean, pressures 300/1,200 lb., T.D. 7,710 ft., perf. 7,619-7,708 ft., completed in Temblor oil sand of Miocene age.

Rio Bravo, Kern County: Superior 6 Pasadena Realty, 33-28s-25e, flowed 1,620 bbl., 38.5-gravity, 0.2 per cent cut, 2,190,000 cu. ft. gas, 32/64-in. bean, pressures 1,125/1,500 lb., T.D. 11,470 ft., 120-mesh perf. 11,374-11,470 ft., completed in Rio Bravo and Vedder oil sands of Miocene age, bottomed in Vedder oil sand.

Rio Vista, Sacramento County: Amerada Pet. Corp. 1 Robinson, 4-4n-2e, abandoned as dry hole, T.D. 6,815 ft., formation test 5,051-5,255 ft., recovered mud, no oil or gas.

Standard 1 Bradford, 20-3n-3e, flowed 894,000 cu. ft. gas, 16/64-in. bean, S.I. pressures 1,280/1,300 lb., T.D. 4,350 ft., P.B. 4,226 ft., 100 holes perf. 4,160-4,223 ft., completed in Rio Vista Cretaceous gas zone.

Ten Section, Kern County: Shell 66-30-A Kern County Land, 30-30s-26e, flowed 974 bbl., 34.1-gravity, 0.7 per cent cut, 1,251,000 cu. ft. gas, 128/64-in. bean, pressures 150/650 lb., T.D. 8,210 ft., perf. 8,039-8,210 ft., completed in Stevens oil sand of Miocene age 7,795-8,210 ft.

SAN JOAQUIN VALLEY OUTPOSTS

Belridge, Kern County: Belridge Oil Co. 55-26 fee, 26-27s-20e, T.D. 10,800 ft. in hard sand, plugging and testing by stages, top Eocene 9,545 ft., elev. 658 ft.

Buena Vista Hills, Kern County: Honolulu 25-P fee, 10-32s-24e, T.D. 14,622 ft., P.B. 2,650 ft., will test gas zone 1,700-50 ft. before abandoning, elev. 916 ft.

Canal, Kern County: Shell 44-14-A Kern County Land, 14-30s-25e, drilling in sand and shale 11,100 ft., first Vedder zone test in field, elev. 325 ft.

Dyer Creek, Kern County: Shell 3 Smith-Cairns, 11-26s-27e, location.

Elk Hills, Kern County: Standard 24-19-R fee, 19-30s-23e, drilling 4,891 ft. in shale.

Standard 62-31-S fee, 31-30s-24e, drilling 6,390 ft. in sand and shale, elev. 1,220 ft.

Standard 45-19-S fee, 19-30s-24e, drilling 11,200 ft. in sand and shale, will be deep test, elev. 707 ft.

Standard 230 Tupman, 36-30s-24e, drilling 3,235 ft. in sand.

Greeley South, Kern County: A. N. Macrate 1 Haberfelde, 32-29s-26e, drilling 11,460 ft. in sand and hard shale, top barren Stevens zone of Miocene age 8,090 ft., Olcese zone 11,180 ft., looking for Vedder, elev. 338 ft.

Jacalitos, Fresno County: Wilshire-Annex Oil Co. 21-26-E, 26-21s-15e, rigging up.

Kern Front, Kern County: Richfield 1 Kraemer, 34-28s-27e, drilling 7,710 ft. in shale, top barren Eocene sand 7,200 ft., may abandon.

Kettleman North Dome, Kings County: Standard 1-1-U fee, 1-23s-18e, T.D. 12,884 ft. in hard gray sand showing considerable gas, redrilled 11,640 ft., tested wet, P.B. 8,555 ft., lower part of hole abandoned, washing perf., elev. 693 ft.

Marysville Buttes, Sutter County: Buttes Oilfields, Inc., 6 Buttes, preparing to spud, elev. 125 ft.

Midway-Sunset, Kern County: North Amer. Oil Consd. 1-28 W.P., 28-32s-23e, drilling 10,290 ft. in hard siltstone, elev. 1,560 ft.

Mountain View, Kern County: Hogan Pet. Co. 1-A Bahrenburg, 32-30s-29e, drilling and coring 7,181 ft. in sand and shale, will be deep test for Vedder zone.

Mount Poso, Kern County: Alpha Oil Co. 1 Elliott, 1-27s-28e, T.D. 995 ft. in granite, elev. 1,325 ft.

Paloma, Kern County: Western Gulf 12-7 Symons, 7-32s-27e, drilling 11,485 ft. in Pliocene sand, most easterly well in field, log shows 50 ft. of oil sand 10,850 ft., elev. 299 ft.

Raisin City, Fresno County: Barnsdall 1 Ripperdan, 24-15s-17e, rigging up.

Seaboard 77-13 S.T.U., 13-15s-17e, drilling in oil sand 5,132 ft., completing.

Shell 31-19 S.A.F.L., 19-15s-18e, drilling in oil sand 5,077 ft., cemented 7-in. casing 5,018 ft.

Shafter, Kern County: Continental 1 Lackenmaier, 36-27s-24e, building rig along west side of section.

Union Avenue, Kern County: Hancock Oil Co. 3 Roberts, 6-30s-28e, drilling 3,840 ft. in sand and shale.

SAN JOAQUIN VALLEY WILDCATS

Altamont district, Alameda County: Shell 1 Nissen, 7-2s-30e, drilling in shale 6,030 ft., elev. 1,023 ft.

Belridge district, Kern County: Ivey Drilling Co. 1 Belridge, 12-29s-21e, drilling 1,138 ft. in sand and shale, P.B. 1,103 ft., 8⅝-in. casing cemented 925 ft., elev. 563 ft.

Ciervo district, San Benito County: Texas 1 Carter, 3-17s-12w, rigging up and preparing to spud.

Helm district, Fresno County: General Pet. 75-33 Esperoad, 33-16s-17e, location along east line of section.

McDonald anticline district, Kern County: Texas Co. 1 Anderson, 19-28s-20e, drilling 5,550 ft. in shale, elev. 1,080 ft.

Rio Vista district, Solano County: Standard 1 Perry Anderson, 2-3n-2e, grading.

Standard 3 State, 6-3n-3e, rigging up.

Texas Co. 1 Huth, 33-4n-3e, building road to location.

Riverdale district, Fresno County: Amerada 45-26 Lawton, 26-17s-19e, drilling 7,198 ft. in sand and hard shale.

Shafter district, Kern County: General Pet. 51-15 S.P., 15-28s-24e, drilling 12,501 ft. in hard shale and sand.

Shale Hills district, Kern County: H. C. Norton 1 Core hole, 30-26s-19e, T.D. 2,205 ft. in shale and oil sand, P.B. 1,000 ft., preparing to pump.

Tideland Oil Co. 1 Grant, 4-27s-18e, drilling 1,010 ft. in sand and shale.

Huntington Beach Hit by Fire, Still an Active Field

The Huntington Beach field came back into the limelight this week with a disastrous fire that destroyed three derricks, six tanks, 3,000 bbl. of crude oil, and pumping equipment on four wells. The fire, located in close proximity to the tideland, burned for 13 hours and then broke out again about 10 hours later and burned for almost a hour. Exact cause of the fire remained undetermined.

O. & D. Oil Co., Beloil Corp. and Charles Camp lost derricks of wood construction. Steel derricks remained standing but were badly warped. These wells are located in the closely spaced town-lot area and might have resulted in considerable loss had the wind been blowing in the opposite direction.

This remarkable old field is still undergoing development and yielding fine wells. Southwest Exploration Co. is still developing the tideland property and with one well nearing completion has foundation in for another. These tideland wells are bottomed out beneath the ocean by directional drilling. Up in the original section of the field Signal Oil & Gas Co. is successfully developing the Bolsa Chica property which it acquired a little over a year ago. This property had been held out of Standard's original Bolsa Chica lease as it contained the club house and blinds of the Bolsa Chica Gun Club.

Drilling operations in the Huntington Beach field kept the ducks from lighting on the ponds with the result that the property was leased to Signal Oil & Gas Co. This operator has been very successful in development work on the Bolsa Chica property and completed about 40 good wells during the first year of the lease, using portable equipment.

Operations at Inglewood Drop to New Low

Drilling operations in the Inglewood field dropped to a new low about 2 weeks ago but a number of new locations have since been staked and additional drilling will get under way shortly. Development work in the Inglewood field involves exploitation of the Sen-

tous zone which is of Miocene age. This zone was originally found by 1 Sentous of R. R. Bush Oil Co. which was an outpost located far out on the north flank of the structure in the extreme southwestern end of the field. Standard Oil Co. drilled an offset to this well but neither this company nor Bush Oil Co. succeeded in developing good sustained production.

In the meantime, Federal Oil Co. began prospecting work in the extreme northwestern end of the structure but eventually Bush Oil Co. took over this work and succeeded in finishing an excellent flowing well that started deep drilling in the present restricted area in the northern end of the field.

LOS ANGELES BASIN COMPLETIONS

Long Beach, Los Angeles County: Union 2 Oil Operators, 13-4s-13w, pumped 120 bbl., 23-gravity, 2.6 per cent cut, T.D. 5,480 ft., gun perf. 5,165-5,205 ft., 5,220-45 ft., 5,345-95 ft., deepened from Pliocene at 4,105 ft. to upper Miocene at 5,480 ft.

Potrero, Los Angeles County: Basin Oil Co. 8 Potrero, 34-2s-14w, flowed compressor 95 bbl., 45-gravity, 30 per cent cut, T.D. 3,691 ft., perf. 2,900-50 ft., 3,600-50 ft., squeezed upper perfs. and cleaned out to bottom, producing from interval 3,600-50 ft.

Seal Beach, Orange County: Hellman Estate 12 fee, 11-5s-12w, flowed 1,042 bbl., 26.9-gravity, 0.1 per cent cut, 500,000 cu. ft. gas, 32/64-in. bean reduced to 16/64-in. bean, pressures 650/1,200 lb., T.D. 5,618 ft., perf. 5,332-86 ft., 5,441-5,615 ft., completed in Wasem zone.

Wilmington, Los Angeles County: Atlantic Oil Co. 4 Water & Power, 33-4s-13w, pumped 130 bbl., 17.5-gravity, 15 per cent cut, T.D. 3,610 ft., perf. 2,700-2,870 ft., 2,920-3,133 ft., gravel packed at 3,320-3,610 ft., completed in Ranger zone of Miocene age.

Lee Davis 1 Wilmington, 29-4s-13w, flowed 174 bbl., 17.1-gravity, 3 per cent cut, 20,000 cu. ft. gas, 24/64-in. bean, pressures 100/250 lb., T.D. 3,705 ft., perf. 3,031-3,131 ft., 3,171-3,302 ft., 3,445-3,704 ft., completed in Ranger zone of Miocene age.

A. D. Mitchell 1 Nelson, 29-4s-13w, pumped 75 bbl., 15.6-gravity, 50 per cent cut, T.D. 3,742 ft., perf. 3,016-3,151 ft., 3,200-3,350 ft., 3,550-3,668 ft., 3,700-42 ft., recompleted in Ranger zone after hole redrilled to original bottom and gravel packed.

LOS ANGELES BASIN OUTPOSTS OR DEEP TESTS

Inglewood, Los Angeles County: Duquesne Oil Co. 2 Smith, 7-2s-14w, derrick.

Hogan Pet. Co. 4-A Machado, 7-2s-14w, drilling in sand and shale 5,782 ft.

Texas Co. 8 Smith, 7-2s-14w, T.D. 8,412 ft. in oil sand, top Nodular 7,840 ft., redrilled 6,730 ft., ran into old hole, backed up, now redrilling 7,746 ft., elev. 242 ft.

Tide Water Associated 71 Vickers, 7-2s-14w, rigging up and preparing to spud.

Tide Water Associated 72 Vickers, 7-2s-14w, drilling 7,891 ft. in sand and hard shale, elev. 350 ft.

Potrero, Los Angeles County: Tide Water Associated 5 Cypress, 34-2s-14w, rigged up.

LOS ANGELES BASIN WILDCATS

Buena Park district, Orange County: Texas Co. 1 Spencer, 1-4s-11w, drilling in sand 1,480 ft., 11¾-in. casing cemented 1,196 ft.

Costa Mesa district, Orange County: M. N. Thompson 1 Banning, 9-6s-10w, T.D. 5,645 ft., redrilling 4,315 ft., cleaning out sand bridges.

Huntington Beach district, Orange County: La Bolsa Rancho Synd. 1 La Bolsa, 22-5s-11w, rigged up.

Palos Verdes district, Los Angeles County: Newton Dev. Co. 1 P.V., 13-5s-15w, T.D. 4,215 ft. in hard sand, milling.

Puente district, Orange County: Sunset Oil Co. 1 Baldwin, 11-2s-11w, T.D. 4,681 ft. in hard gray sand and black shale with streaks of conglomerate and oil sand, top Kraemer shale 3,888 ft., gun perf. 3,706-10 ft., 3,721-25 ft., bailed dry, will abandon.

Rio Hondo district, Los Angeles County: Potrero Oil Co. 1 Newman, 32-1s-11w, drilling 1,140 ft. in sand, located 1 mi. N of eastern tip of Montebello field, elev. 145 ft.

Santa Ana Canyon district, Orange County: Atlas Oil Co. 1 Santa Ana, 36-3s-9w, building rig.

Whittier district, Los Angeles County: Los Nietos Valley Oil Co. 1 Los Nietos, 29-2s-11w, rigged up.

Axis Pet. Co. 1 Tandberg, 13-2s-11w, preparing to start work.

Union 13 Sansinena, 30-2s-10w, drilling 1,196 ft. in sand, cemented 11¾-in. casing 412 ft.

West Cat Canyon Well May Extend Miocene Pay Area

A. E. Bell is redrilling 1 Gilmore in the West Cat Canyon field of Santa Barbara County following a fishing job. This well is being watched with considerable interest. It is located in an area that appears to have considerable merit and also, if it is successfully completed as a good well, it will extend the northern limits of Miocene production and lead to additional drilling.

This well bailed about 200 bbl. of clean oil from 6,178 ft. but failed to show any kick with the result the operator decided to make some additional hole before putting the well on the beam. This outpost is probably somewhat lower structurally than other recent completions to the south and for this reason the next 250 ft. of hole may determine the well's future production possibilities.

On the Los Flores property south of this well, Standard Oil Co. has concluded drilling operations on 3 Los Flores at 6,100 ft. and a pumping test is now under way. This well is being drilled by the Mabee Drilling Co. which concern will also drill 4 Los Flores, the rig for which has been erected. The Santa Maria Valley field is again becoming quite active and judging by the number of new rigs erected and locations staked this field will continue on the active list during the early part of next year. This field produces a crude oil that averages about 16° in gravity and yet the oil yields about from 18 to 22 per cent straightrun gasoline. The gasoline, however, must be blended in order to reduce the sulfur content to a minimum.

Several Wells Staked in Rincon Field

In Ventura County, Chanslor-Canfield Midway Oil Co. is preparing to drill several new wells in the Rincon field where the company has found a deep zone that is apparently considered commercially productive. This deep sand in the Rincon field has been found to be very tight in the two wells that have been drilled into the zone up to date and there does not appear to be much reason to expect to find it more porous or permeable at some other point in the field. The company's initial well in this lower zone is pumping about 190 bbl. daily and it is thought quite possible that 3-C Hobson will show somewhat better production when it is completed. This well, which is bottomed at 10,515 ft., encountered mechanical trouble and the company is now redrilling after shooting off the drill pipe at 9,260 ft. This means that the lower portion of the hole has been lost and the new bottom will be at the point where the redrilling job is concluded.

COASTAL DISTRICT COMPLETIONS

Santa Barbara Valley, Santa Barbara County: Field Gasoline Corp. 1 Brown, 15-10n-35w, flowed 1,100 bbl., 17-gravity, 1 per cent cut, 48/64-in. bean, pressures 500/600 lb., T.D. 5,500 ft., perf. 5,220-5,495 ft., completed in Santa Maria Valley oil sand of Miocene age.

Hancock and Bush 7 Bradley, 26-10n-34w, flowed 1,118 bbl., 15.1-gravity, 1 per cent cut, 128/64-in. bean, pressures 75/450 lb., T.D. 4,784 ft., perf. 4,102-4,780 ft., completed in Santa Maria Valley oil sand of Miocene age.

Lomi Oil Co. 2 Fairfield, 28-10n-34w, pumped 396 bbl., 15.1-gravity, 1.2 per cent cut, T.D. 5,250 ft., perf. 4,855-5,245 ft., completed in Santa Maria Valley zone of Miocene age.

Union 2 Fleisher, 31-10n-34w, pumped 185 bbl., 20.4-

(Continued on Page 83)

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Pettit Lime Deep Horizon at Haynesville Produces

By R. MARNE SANFORD

SHREVEPORT, La., Nov. 24.—A new and deeper producing horizon from the Pettit lime has been found in the old Haynesville field of Claiborne Parish. The deeper discovery is in the middle of the south side of the old lime field which was discovered in 1921.

It is T. L. James 1 Akin, N½ NE 27-23-8. The test flowed at the rate of 30 bbl. hourly early in the week, the output being mixed wash water, acid and oil. Later in the week and after being closed in for a 12-hour period, it was opened to flow 20 bbl. of oil with very little wash water per hour. The flow was sustained for the full 8-hour period and pressures were still up when it was closed in. The oil checks 39.8 gravity and pressures amounted to 850 lb. on tubing and 550 lb. on casing, closed in. The latest gage was through ¼-in. choke.

SUMMARY OF COMPLETIONS

North Louisiana

	No.	Bbl.	Footage
Oil wells: Caddo	3	240	4,959
Nebo	4	465	12,149
Olla	1	63	2,430
Gas wells: Monroe	2	*12.6	4,314
Dry holes: Wildcats	2	.....	13,229
Caddo	2	.....	2,880
Cypress Bayou	1	.....	5,835
De Soto	1	.....	3,500
Olla	2	.....	5,135
Total	18	.....	54,331

Arkansas

	No.	Bbl.	Footage
Oil wells: Fouke	1	340	3,750
Stephens	1	210	3,397
Gas wells: Macedonia	1	*5.6	8,922
McKamie	1	*2.6	9,336
Total	4	.....	25,405

*Million cu. ft.

The well is producing from the Pettit lime topped at 5,414 ft. and carrying saturation from that point to 5,427 ft. where a shale break was found to 5,433 ft. More saturation was found to the bottom of the section at 5,445 ft. The upper zone was not acidized, only the lower. There are two other wells in the field which are producing from the general Glen Rose member, which embraces the three producing horizons of the Rodessa series and several horizons of the Pettit series. One of the other wells was completed from the Gloyd sand of the Rodessa series and the other from the Hill sand of the same series. No production had previously been found in the deeper Pettit lime zone. All other production in this old field was from the 2,850-2,900-ft. Blossom sand.

The other two deep wells never became markedly large producers, thus little development resulted to the deeper level. The present rate of flow of the new well is indicative of a renewed drilling program for the old field.

The Glen Rose or lower Trinity subgroup has been subdivided into a number of groups of which the Rodessa group and the Sligo (Pettit) are members. The Rodessa group, which is the principal producing formation on the north and northwest side of the Sabine uplift is not as important on the east side. Sligo, or Pettit, production now surrounds the large high on three sides, west, south and east, and the Haynesville discovery pushes the known productive area farther down the east flank as Cotton Valley has been on production in this formation since 1922.

The Cotton Valley series, which is the most important play in Cotton Valley has not been tested to the east. At Haynesville, it is believed to be at about 8,600 ft., or some 3,200 ft. below the top of the Sligo.

Rapides Parish Discovery Still Testing

The indicated Wilcox zone discovery well in Rapides Parish of 2 weeks ago is still hampered with excessive water. It is M. H. Marr and Phillips Petroleum 1 Eota Realty Co., SW NE 14-4n-3e. Total depth is 7,078 ft. and the past week unsuccessful attempts at production were made through perforations from 5,787-88 ft. and 5,149-54 ft. Completion attempts the past 2 weeks had been from the 5,780-90-ft. level. However, this zone was apparently given up as barren when the hole was plugged back and a retainer set at 5,186 ft.

Sands showing oil had previously been logged from 5,005 to 5,150 ft. The second of the two tests the past week was from 5,149-54 ft., which resulted in considerable salt-water recovery on swab with only about 5 per cent being oil. Further testing will be done from this 5,000-5,100-ft. level, still in the Wilcox.

The Wilcox was topped at 3,962 ft., the Midway at 7,014 ft., making a total section of Wilcox amounting to about 3,050 ft., one of the thickest sections yet found in any deep exploratory test in Central Louisiana.

Wilcox Wildcat Sets Casing to Test

Although nothing definite has yet been released, the Roy L. Fisher 1 Womack, NW NE 12-6n-6e, in Catahoula Parish, was arranging to set casing for production tests. Decision was based on results of 97 side-wall cores which showed prospective oil sand from 5,532-48 ft. Top of the Wilcox is 3,754 ft., Midway 6,779 ft., and total depth 6,810 ft.

New Locations Include Many Wildcats

New locations in the North Louisiana district showed a decided increase the past week with a total of 30 starts listed. Of this number there were six wildcats staked and all except one located in the Central Louisiana Wilcox play.

The Nebo field led with five new starts, the Sligo, Caddo, and Monroe gas fields each had four new locations, and the old Urania field reported two new locations. There was one new start each listed for the Logansport, Olla, Little Creek, South Olla and Trout fields. The new wildcats are as follows:

Caldwell Parish: Carter Oil 1 La. Central, SE SW 22-13n-2e.

Catahoula Parish: Placid Oil 1 Grant Timber, NW SW 21-7n-6e.

C. H. Lyons 1 Hargis, NW NW 18-7n-6e.

La Salle Parish: Carter Oil 1 Tensas, SE SW 25-6n-3e.

Richland Parish: B. Manziel 1 Wooten, C NE 28-15n-5e.

Winn Parish: Carter Oil 1 Urania Lumber, SW NE 31-12n-1e.

NORTH LOUISIANA COMPLETIONS

Wildcats

Concordia Parish: J. K. Hughes 1 Merrill, NE SW 23-7n-9e, top Sparta 2,810 ft., Wilcox 4,030 ft., dry at 6,754 ft.

La Salle Parish: Phillips Petroleum 1-I Tensas Delta, SE NE 1-5n-4e, top Cockfield 1,837 ft., Sparta 2,618 ft., Wilcox 3,419 ft., Midway 6,290 ft., dry at 6,475 ft.

Fields

Caddo, Caddo Parish: A. H. Carpenter 1 Chew estate, SW NE 5-20n-16w, abandoned location at 52 ft.

C. C. Crews 14 Stiles, NE SW 33-21n-16w, 80 bbl., 1,875 ft.

A. R. Hancock 15 Helpman, NW SE 16-21n-16w, dry at 1,030 ft.

Magnolia 38 Doan-Thigpen, SW NE 6-20n-15w, 20 bbl. oil and 8 bbl. water, 1,527 ft., T.D.

J. E. Marshall 4-A Spell, NW SE 29-21n-15w, flowed 140 bbl. daily, 1,557 ft., T.D.

Texas Co. 8 Herndon, SW NE SW NW 22-21n-15w, junked and abandoned at 1,580 ft., T.D.

Cypress Bayou, La Salle Parish: Carter Oil 1 Highland Farms, SW NE SE NW 12-6n-4e, top Cockfield 1,530 ft., Cook Mountain 2,105 ft., Sparta 2,250 ft., Cane River 2,968 ft., Wilcox 3,096 ft., top sand 4,699 ft., Midway 5,799 ft., dry at 5,835 ft.

De Soto-Red River, Natchitoches Parish: John L. Trentman 1 Brown Lbr. Co., NW SE 31-11n-10w, dry at 3,500 ft.

Monroe, Union Parish: Inabinett & Pipes 1 Clark, NW SE 9-20n-3e, 5,660,000 cu. ft. gas, 2,129 ft., T.D.

Inabinett & Pipes 2 Union Prod. fee, NW SE 23-21n-3e, 6,976,000 cu. ft. gas, 2,185 ft., total depth.

Nebo, La Salle Parish: C. G. Mears 1 West Francis, NE SW 38-7n-3e, 100 bbl. oil and 25 bbl. water, perf. casing 3,392-93½ ft., 4,175 ft., T.D.

Placid Oil 2 Couch unit, SW NW 28-8n-3e, 102 bbl. oil and 52 bbl. water, perf. casing 3,367-71 ft., T.D. 3,861 ft.

Placid Oil 4 J. N. Gray, 38-7n-3e (irregular), 133 bbl. oil and 23 bbl. water, perf. casing 3,960-63 ft., T.D. 4,056 ft.

W. O. Woodward 1 Coon Unit, SE NW 11-7n-3e, 130 bbl. oil and 5 bbl. water, perf. casing 3,990-96 ft., T.D. 4,057 ft.

Olla, La Salle Parish: Doncia Oil 1 Flowers, NW SW 12-10n-2e, dry at 2,360 ft.

H. L. Hunt 35-F Goodpine, SW NE 18-10n-3e, 63 bbl. oil and 20 bbl. water, perf. casing 2,252-60 ft., T.D. 2,430 ft.

H. L. Hunt 103-F Goodpine, NW NE 27-9n-2e, dry at 2,775 ft.

Gas Supply for Plant At McKamie Increased

As the time draws near for the actual starting of work on the new gas desulfurization plant in the McKamie field of Lafayette County, development in that field assures an adequate supply of gas for the plant's operation. This was, of course, assured prior to planning the plant, but new completions will make the immediately available gas supply much larger than was first expected.

Only a few months ago the McKamie field was a small five-well gas field. However, during the past week, two new wells were brought in and another was preparing for completion. These will be the thirteenth, fourteenth and fifteenth wells for the large gas structure. Atlantic Refining 7 Bodcaw, SE NW 33-17s-23w, was completed for 480 bbl. of distillate, 56.8 gravity, and 2,592,000 cu. ft. of sour gas daily, from casing perforations at 9,266-82 ft. and 9,296-9,308 ft. The total depth is 9,336 ft.

The same company's 8 Bodcaw, 32-17-23, topped porosity and saturation at 9,095 ft. and carried broken pay to 9,300 ft., total depth. Casing has been set. Carter Oil 1-B Marble Hanes, 30-17-23, was coring for pay below 9,000 ft. and the same firm's 2 Marble Hanes, 31-17-23, was drilling below 3,500 ft. At the present rate of development in the field there will be some 30 or 35 wells from which gas may be drawn at the time the plant is finished and ready for operation.

Village Field Gets Large Well

The first completion in several months for the Village field was registered the past week when E. G. Bradhan 1 Threadgill, 15-17-19, Columbia County, flowed 60 bbl. daily on pinched choke. The total depth is 7,426 ft. with casing swung 1 ft. off bottom. Top of the Smackover was 7,380 ft.

ARKANSAS COMPLETIONS

Fields

Fouke, Miller County: Carter Oil 6 W. P. Sturgis, NE SW 1-17s-27w, 340 bbl. oil and no water, perf. casing 3,605-20 ft., 3,750 ft., T.D.

Macedonia, Columbia County: General Crude Oil 1 Franks, NW NE 21-18s-21w, 493 bbl. of 61-gravity distillate with 5,645,000 cu. ft. gas, perf. casing 8,896-8,922 ft., total depth.

McKamie, Lafayette County: Atlantic Ref. 7 Bodcaw, SE NW 33-17s-23w, 480 bbl. of 56.8-gravity distillate with 2,592,000 cu. ft. gas, perf. casing 9,266-82 ft. and 9,296-9,308 ft., total depth 9,336 ft.

Stephens, Columbia County: R. H. Crow 3 Smart, NE SW 12-15s-20w, 210 bbl. oil, perf. casing 3,394-97 ft., T.D.

AVERAGE DAILY PRODUCTION

NORTH LOUISIANA

	Nov. 22	Nov. 15
Caddo light	6,575	6,520
Caddo heavy	2,210	2,230
Cotton Valley	17,075	17,420
Cross Lake	2,550	2,510
De Soto and Red River	995	1,005
Haynesville	2,575	2,625
Homer	2,985	2,980
Lisbon	2,430	2,550
Little Creek	2,860	2,880
Nebo	4,915	4,580
Olla	14,160	14,110
Rodessa	13,210	13,155
Sligo	2,510	2,505
Sugar Creek	1,450	1,470
Urania	2,000	2,090
Zwolle	950	960
Total North Louisiana	81,955	82,120

SOUTH ARKANSAS

Atlanta	2,805	2,800
Buckner	2,310	2,325
Champagnolle	805	925
Dorcheat	1,810	1,820
El Dorado	1,400	1,360
Magnolia	18,905	18,850
Nick Springs	690	685
McKamie	2,375	2,190
Rodessa	1,200	1,165
Schuler	16,605	16,565
Smackover light	1,800	1,825
Smackover heavy	12,590	12,635
Troy	1,290	1,310
Urbana	2,735	2,800
Village	900	965
Total South Arkansas	73,360	72,780

MISSISSIPPI

Tinsley	78,475	75,805
Pickens	455	455
Total Mississippi	78,930	76,255

Oklahoma City Hoover Sand Zone Development Planned

By ROBERT INGRAM

THE Oklahoma City field last week was given another boost in its recent revival by plans for development of the upper Hoover sand zone on the extreme north end of the field. Workover jobs and new drilling as a direct result of the engineering study made public last summer by the Oklahoma City Wilcox secondary recovery committee had already made the field one of the most active in the state. There were 27 active operations in the field, most of them drilling for the Wilcox.

Last week the new Hoover sand area, opened several months ago at Clark Oil & Gas Co. 1 Proffit, SW NW SE 15-12-3w, was the center of a lease-buying and trading area and the Corporation Commission had before it a petition from Anderson-Prichard Oil Corp. (which took over operation of the 1 Proffit) for an extension of the spacing order issued in September to cover the new extension. Hearing was set for December 3.

The extended area would cover virtually all of the Simpson dolomite zone and parts of the Wilcox sand zone. The petition asks 10-acre spacing for oil wells in the upper Hoover sand in the NE, NW and SW Section 15 and the N½ 22-12-3w. Previously the commission ordered 10-acre spacing for oil wells in the SE 15-12-3w. Gas wells were to be spaced on 40-acre units.

Most of the acreage involved is platted and subdivided into city lots and small tracts. Original drilling in the dolomite zone there was haphazard with the result that one 10-acre tract once had nine locations on it and the reservoir was depleted almost before some of the operators had a chance to get a barrel of oil into the tanks.

More orderly development, however, has made the Hoover sand strike attractive to operators and the 1 Proffit has held up in good shape. It came in as a 150-bbl. well. In their petition, Anderson-Prichard set forth that the well appears to be one which will produce a great deal of oil from the upper Hoover sand.

At present there is no development of the Hoover zone west of Lincoln Boulevard, but several operators have announced intention of plugging back and perforating in some of the old holes.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Fields	21	4,607	69,807
Wildcats	1	4	1,500
Gas wells: Fields	1	*1.5	2,017
Wildcats	1	*13	4,449
Dry holes: Fields	6	.....	16,507
Wildcats	3	.....	8,773
Total	33	.....	103,053
Recompletions	2	29	.....

*Million cu. ft.

New Work Scheduled in Old Areas; Maud District May Have Strike

Twenty-four tracts, aggregating 1,532.09 acres in North Central Oklahoma, were sold for oil and gas rights at the offering at the Shawnee Indian Agency at Shawnee. Two carried well-drilling obligations—one in the Maud district of Pottawatomie County, the other east of the old Sporn pool. . . . One of four wildcats drilling on the Apache trend near Elgin in Comanche County was a dry hole last week. It was Texas Co. 1 School Land-A, SW SE NW 13-3-10w, bottomed at 7,170 ft. . . . Carter Oil Co. started work at 1 School Land, NE NE NW 13-21-2, west of Morrison in Noble County, a Wilcox sand test. . . . Kerlyn Oil Co. had some sort of well to open a new field in the Maud district of Pottawatomie County at 1 Kirk, NE NE SW 1-8-4. Best pay, not yet gaged, was at 4,340-51 ft.

OKLAHOMA COMPLETIONS

Wildcats

Lincoln County: Big Chief 1 Barrett, W½ SW NE 20-13-6, gaged 13,000,000 cu. ft. gas, 1,625 lb. R.P., Hunton 4,183-4,210 ft., 6-in. 4,283 ft., acid, T.D. 4,449 ft., *discovery.*

Okfuskee County: J. E. Miller 1 Winship, SE SE SW 12-11-8, dry, T.D. 3,509 ft., sandy Wapanucka 3,469 ft.

Konowa Operating 1 Franks, NE SW SW 3-11-8, dry, T.D. 3,684 ft., Cromwell 3,618 ft.

Walker and Sexton 1 Hilderbrandt, NW NE SE 19-10-11, dry, T.D. 1,580 ft., 7-in. 1,128 ft.

Seminole County: R. F. Tate 1-B Fleets-Osborn, SE SW NE 11-6-7, pumped 4 bbl., Calvin 1,474-88 ft., 5-in. 1,474 ft., shot, T.D. 1,500 ft., *discovery.*

Fields

Ada, Pontotoc County: Sonora 1 Bolen, NW SE 3-4-6, location abandoned.

Allen, Pontotoc County: Sales 1-A Patterson, SW SE SW 20-5-8, pumped 10 bbl., pay 867-90 ft., 6-in. 866 ft., T.D. 900 ft.

Broyles, Payne County: Mulberry Oil 9 Broyles, NE NW NW 26-18-4, old well, old T.D. 3,880 ft. in Wilcox, P.B. pay 3,403-3,540 ft., gaged 6,005,000 cu. ft. gas.

East Cromwell, Okfuskee County: Shell 3 Lehmer-A, SW NE SW 26-11-8, 210 bbl., Cromwell 3,315-3,469 ft., T.D. 3,469 ft.

Shell 2 Harjo, NW SE NW 35-11-8, 448 bbl., Cromwell 3,404-57 ft., T.D. 3,457 ft.

Shell 2 Palmer-B, SW SE NW 35-11-8, flowed 1,221 bbl., Cromwell 3,392-3,413 ft., T.D. 3,443 ft.

Cumberland, Marshall County: Pure 2 Thompson-107, NE NW NE 33-5s-7e, flowed 584 bbl. through 1-in. choke on tubing, McLish 5,709-56 ft., 7-in. 5,650 ft., T.D. 5,756 ft.

West Davenport, Lincoln County: Bryan 1 Holaday SW SW SW 28-15-5, flowed 100 bbl., Prue 3,465 ft., 7-in. 3,467 ft., shot, T.D. 3,492 ft.

West Duncan, Stephens County: J. B. Baker 1-A Clarkson, SE NW NW 30-1s-8w, location abandoned.

Earlsboro, Seminole County: Sinclair 3 Jones, SE SW SE 15-9-5, pumped 38 bbl., Earlsboro 3,410-41 ft., 7-in. 3,410 ft., T.D. 3,700 ft.

West Earlsboro, Pottawatomie County: Darby 2 Nadeau, NW SW 19-9-5, flowed 100 bbl., Hunton 4,076 ft., 5-in. 4,076 ft., acid, T.D. 4,120 ft.

Empire, Stephens County: O. M. Pierce 3 Burk, NW SW NE 34-1s-8w, pumped 25 bbl oil and 60 bbl. water, pay 2,220-27 ft., T.D. 2,312 ft.

West Hewitt, Carter County: Merrick 3 Patterson, SW SE SW 21-4s-2w, old well, old T.D. 2,382 ft., T.D. 2,400 ft., pumped 19 bbl.

Hobart, Kiowa County: Shell 4 Ratliff, NE SE NE 19-7-17w, old well, old T.D. 1,060 ft., T.D. 1,498 ft., 1,000,000 cu. ft. gas.

West Hotulke, Pottawatomie County: Atlantic 3 Higbee, NW SE SW 22-9-4, pumped 264 bbl., second Wilcox 4,610 ft., 5-in. 4,617 ft., T.D. 4,622 ft.

Atlantic 1 Nisbett, SE NW NW 27-9-4, pumped 353 bbl., second Wilcox 4,673 ft., 5-in. 4,686 ft., T.D. 4,689 ft.

Isom Springs, Marshall County: Denison 1 Adams, SW NW NE 6-8s-6e, pumped 25 bbl., pay 533 ft., 7-in. 532 ft., T.D. 542 ft.

West Loco, Stephens County: Raizin 1 Lowery-A, SW SE NE 6-3s-5w, dry, T.D. 1,306 ft.

South Maud, Pottawatomie County: Delaney 1 Simpson, SE SW SE 29-8-5, dry, T.D. 4,450 ft., Wilcox 4,440 ft.

Oklahoma City, Oklahoma County: Henson 2 Giles, NE NE SW 15-11-3w, pumped 333 bbl., Wilcox 6,382 ft., 7-in. 6,385 ft., shot 6,518-56 ft., T.D. 6,556 ft.

Romulus, Pottawatomie County: E. W. Young 1 Brown-A, NE SW NE 6-7-4, flowed 300 bbl., Hunton 3,970 ft., 7-in. 3,972 ft., T.D. 4,005 ft.

Sasakwa, Seminole County: Eason & Grisso 1-B Bryant, NE SW NW 6-7-8, flowed 58 bbl., Calvin 1,156-67 ft., 5-in. 1,242 ft., shot, T.D. 1,268 ft.

Section 34-17-8, Creek County: Zephyr Drilling 1 Emarthlocee-B, NE NW SW 34-17-8, pumped 55 bbl., Red Fork 2,741-71 ft., 7-in. 2,399 ft., T.D. 2,771 ft.

East St. Louis, Pottawatomie County: Kerlyn 2 Bowlby, SE SW SE 9-7-5, pumped 15 bbl., dolomite 4,070 ft., 7-in. 4,065 ft., acid, T.D. 4,132 ft.

Tussy, Carter County: Skelly 5 Miller, SW SW NE 5-1s-3w, pumped 94 bbl. oil, 1 per cent water, pay 2,995-3,136 ft., 7-in. 2,995 ft., T.D. 3,343 ft.

Velma, Stephens County: Skelly 3 Nicholas-2, NW SW SE 36-1s-5w, pumped 14 bbl. in 8 hr., 7-in. 685 ft., T.D. 751 ft.

North Wewoka, Seminole County: Devonian 1 Harrison, SW NW NE 4-8-8, flowed 241 bbl. oil and 25 bbl. water, Hunton 3,960-79 ft., 7-in. 3,293 ft. acid, T.D. 4,308 ft.

Miscellaneous

Lincoln County: Yorkan 1 Soward, SW SW SW 15-15-6, dry, T.D. 4,068 ft., Hunton 4,055 ft .

McIntosh County: McNutt & Young 1 Love, N½ NW 12-12-16, dry, T.D. 1,950 ft.

Okmulgee County: R. L. Soper and L. B. Jackson 1-A Robins, dry, T.D. 2,818 ft., Wilcox 2,800 ft.

Wood Oil 3-A McAdoo, SE SE NE 28-13-13, gaged 1,500,000 cu. ft. gas, pay 2,010-15 ft., 400 lb. R.P., 2½-in. 2,008 ft., T.D. 2,017 ft.

Osage County: Phillips 1 Osage, NE SE SW 18-27-8, pumped 119 bbl., Mississippi lime, 5-in. 2,397 ft., perf. 2,424-36 ft., T.D. 2,441 ft.

Alf Landon 4 Osage, NE NW SE 17-25-9, old well, old T.D. 1,861 ft., T.D. 1,915 ft., pumped 10 bbl.

Pawnee County: H. Fogle 1-A Truschel, NE SE NW 35-21-7, dry, T.D. 1,915 ft., Cleveland 1,902-15 ft.

Input Wells

Glenn Pool, Creek County: Sinclair Prairie 30 Berryhill, T.D. 1,569 ft.

L. B. Jackson 26 Vowell, NW SW SW 16-17-12, Glenn sand 1,408-1,532 ft.

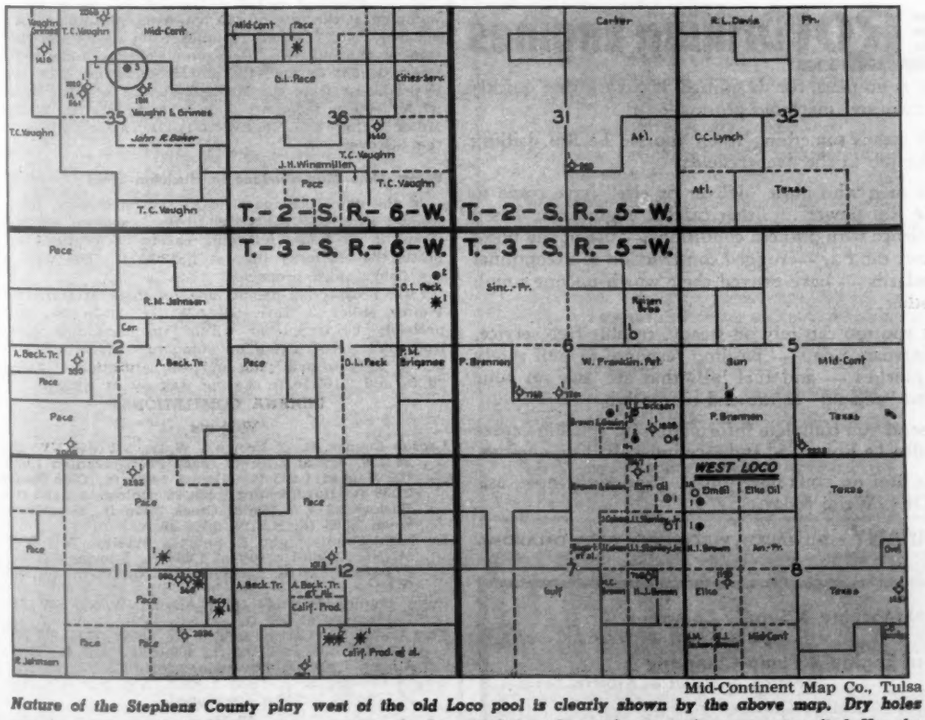
OKLAHOMA DRILLING REPORT

North and East

Creek County: D. B. Malernee 1 Rountree, SE NW SW 2-14-7, drilling 1,190 ft.

Deep Rock et al 1 Meadors, SE NW NE 16-15-7, T.D. 3,984 ft., Wilcox 3,973 ft., flows 50 bbl. from Bartlesville around pipe and swabs 50 bbl. from Wilcox, testing.

(Continued on Page 90)



Mid-Continent Map Co., Tulsa

Nature of the Stephens County play west of the old Loco pool is clearly shown by the above map. Dry holes are frequent, production comes from various depths. Circled to the northwest is the most recent find, Vaughn & Grimes 3 Baker. The West Loco pool is a 1941 discovery

Two-Zone Strike Near Mount Vernon Makes Big Well

By STAFF CORRESPONDENT

EVANSVILLE, Ind., Nov. 24.—Developments in southern Indiana during the past week attracted the attention of many oil operators as the Carter Oil Co. strike near Mount Vernon was heralded as one of the most important in the history of Indiana oil exploration. The test, Carter 1 Maier, N½ NE SW 1-7s-14w, 1½ miles northwest of Mount Vernon, swabbed 1,100 bbl. of oil in 24 hours from the Waltersburg and Cypress sands. The Waltersburg pay was from 1,965-2,015 ft. and the Cypress from 2,438-48 ft. Only the first wells completed in the McClosky lime in the Griffin field had larger potentials than does the Maier test.

In previous tests the well swabbed 90 bbl. in 8 hours from the Waltersburg only through a single perforation made to test a cement job. The well also swabbed 307 bbl. in 8 hours from the Cypress only during initial tests of that formation. After testing of the Cypress, 16 casing perforations were made opposite the Waltersburg and the well was produced from both formations, indicating at least a two-pay field.

First offset to 1 Maier, Sinclair-Wyoming 1 Hageman, N½ NW SE 1-7s-14w, is also being completed in the two formations.

Vanderburg County Wildcat Finds Oil in Waltersburg

One of the most interesting tests yet drilled in Vanderburg County, Settle 1 Bert Edwards, SE SW NW 16-7s-11w, 5 miles southwest of Evansville, is drilling below 1,915 ft. after recovering oil during a drill-stem test of the Waltersburg sand.

The drill-stem test was made at 1,647-56 ft. and in 1 hour 180 ft. of oil and 45 ft. of oil-cut mud were recovered. Contract depth of the test is the McClosky, which is expected around 2,500 ft. Unless better saturation is found in deeper formations, the well probably will be plugged back to the Waltersburg to test production.

SUMMARY OF COMPLETIONS

Indiana

	No.	Bbl.	Footage
Oil wells	4	314	8,010
Dry holes	6	.....	9,910
Total	10	.....	17,920

Ohio

	No.	Bbl.	Footage
Oil wells	1	7	1,028
Gas wells	11	*5.9	25,926
Dry holes	14	.....	58,809
Total	26	.....	85,763

Eastern Kentucky

	No.	Bbl.	Footage
Oil wells	2	11	1,691
Gas wells	2	*0.7	6,823
Total	4	.....	8,514

Western Kentucky

	No.	Bbl.	Footage
Oil wells	3	77	2,822
Dry holes	2	.....	2,464
Total	5	.....	5,286

*Million cu. ft.

New Oil Field Opened in Gibson County

R. D. Brown 1 Harry Antell, NE SE 20-1s-11w, is pumping at the rate of 300 bbl. a day natural, with a spudder. No. 1 Antell, 4 miles from nearest production in the old West Princeton field, is midway between Mount Carmel, Ill., and Patoka, Ind. The test is producing from the McClosky at 2,258-62 ft. Meanwhile, rotary tools are being rigged up at Walter Miller 1 Hall, E½ NE SW 20-1s-11w, a west offset to the discovery.

Salem Lime May Produce in Hazleton Field

In the new Hazleton field of Gibson County, Kingwood 1 Kirk, NW SE NE 26-1n-10w, swabbed 100 bbl. of oil in 24 hours following casing perforations opposite the McClosky lime at 1,812-25 ft. The well is the field's third producer.

First prospective Salem lime producer at Hazleton, Walter Miller 2 Kerr, SE NW NE 26-1n-10w, will probably be completed within the next few days. Operators were rigging up standard tools at the end of the week to drill plug and test saturation at 2,080-90 ft. and 2,100-10 ft. Casing was set at 2,080 ft.

INDIANA COMPLETIONS

Wildcats

Gibson County: R. D. Brown 1 Watts, SW SW NW 29-2s-12w, dry at 2,738 ft., base Pennsylvanian 1,626 ft., Menard 1,805 ft., Vienna 1,930 ft., Glen Dean 2,036 ft., Hardinsburg 2,066 ft., Golconda 2,193 ft., Barlow 2,274 ft., Paint Creek 2,406 ft., Ste. Genevieve 2,565 ft., H.F.W. 2,735-38 ft.

La Porte County: John E. Short 1 Stahley, W½ NW SE NE 33-36n-1w, dry at 1,368 ft., Silurian 391 ft., Brassfield 878 ft., Richmond 955 ft., Trenton 1,277 ft.

Posey County: Pyramid Oil 1 Allyn, NW NE SW 24-7s-13w, dry at 500 ft.

Vigo County: McCarthy et al 1 Reynolds, W½ SE 25-11n-10w, dry at 2,222 ft., Kincaid 1,625 ft., New Albany 1,904 ft., Devonian 2,009 ft.

Wayne County: E. L. Root 1 Kain, NW NW NW NE 26-17n-12e, location abandoned.

Fields

Bufkin South, Posey County: Lloyd Sloan et al 2 Seifert, S½ NW NW 30-6s-12w, rig abandoned.

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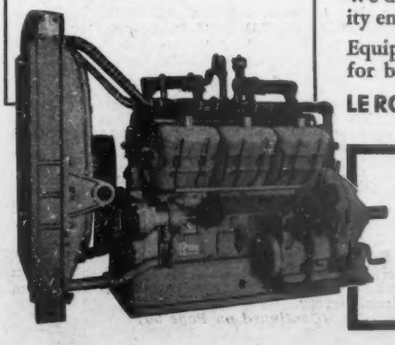

General Machine & Supply Company
Wichita Falls — Odessa, Texas

Southern Engine & Pump Company
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Western Machinery Company
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Central States 2 Seifert, N½ NE NW NW 30-6s-12w, pumped 18 bbl., 10-qt. shot 1,085-97 ft., pay 1,085-97 ft., T.D. 1,097 ft.

Cannelburg, Daviess County: Morbalg Dev. 1 O'Brien, W½ SE SE 8-2n-5w, location abandoned.

Griffin, Gibson County: Hall-Edwards 48 Maier, SE NE NE 14-3s-14w, pumped 100 bbl., 40-qt. shot 2,116 32 ft., T.D. 2,139 ft.

Heusler, Posey County: S. C. Yingling et al 2 Welborn, NW NE NE 1-7s-12w, pumped 100 bbl., 30-qt. shot 1,763-72 ft., T.D. 1,783 ft.

New Harmony, Posey County: Superior 31 New Harmony, NW NE SE SW 34-4s-14w, pumped 96 bbl., 2,000 gal. acid 2,876-85 ft., T.D. 2,991 ft.

St. Francesville, Knox County: A. B. Taylor et al 1 Taylor, NE NE SW 21-2n-11w, dry at 1,970 ft., Tar Springs 1,405 ft., Glen Dean 1,490 ft., Hardinsburg 1,515 ft., Golconda 1,585 ft., Barlow 1,620 ft., Paint Creek 1,725 ft., Benoist 1,778 ft., Renault 1,878 ft., Ste. Genevieve 1,887 ft.

Miscellaneous, Gibson County: Bert Fields et al 2 Hall, NW SE NW SW 31-2s-12w, dry at 1,112 ft., no sand.

OHIO

NEWARK, Ohio, Nov. 24.—Development southwest of Tippecanoe, in Harrison County, received the second setback in as many weeks with the northern offset to the deep Clinton sand gas wells coming in dry at 5,920 ft. The eastern offset was reported as a failure last week.

Two wildcats are approaching the Clinton horizon. The East Ohio 1 S. W. Anderson, Deerfield Township, Portage County, is drilling in the bottom of the Big lime at 4,250 ft. about ready to set 5⅛-in. casing. In Ashtabula County, Richland Township, the Ohio Oil Co. 1 Hatton Brothers set 5⅛-in. casing at 3,483 ft. Benedum-Trees are still cleaning out in Monroe Township, Harrison County.

C. W. Ross et al interests are moving in a rig for a deep test in Washington County. The test is located 3 miles north of Lowell, Lot 49, Adams Township, on the Charles Augustine tract.

Summit County had a new gas well gaging better than 2,000,000 cu. ft.

OHIO COMPLETIONS

Ashland County

Green Township: Ohio Fuel 1 John F. Mang, Sec. 5. 150,000 cu. ft. gas, Clinton, T.D. 2,697 ft.

Lake Township: Robinson Co. 9 E. A. Deviney, Sec. 9, dry, Clinton, T.D. 2,898 ft.

Athens County

Ames Township: Ohio Fuel 3 J. T. Fleming, Fraction 3, 170,000 cu. ft. gas, T.D. 808 ft. (old gas well deepened).

Canaan Township: Wallace & Sons 1 Elmer Halbirt, Fraction 6, 100,000 cu. ft. gas, shot, second Berea, T.D. 1,415 ft.

Lodi Township: H. B. Walker & Co. 1 Midkiff, Sec. 1, Garden P. O., dry, second Berea, T.D. 1,740 ft.

Belmont County

Somerset Township: Barnesville Dev. Co. 1 William Schneider, Sec. 2, show oil, Keener, plugged, T.D 1,323 ft.

Cuyahoga County

Dover Township: East Ohio 1 E. Glendenning, Lot 23. 230,000 cu. ft. gas, Clinton, T.D. 2,562 ft.

Harrison County

Washington Township: East Ohio 1 Amaca Phillips Sec. 33, dry, stray Clinton 5,733-48 ft., red Clinton 5,748-66 ft., white Clinton 5,766-86 ft., Medina red 5,908 ft., T.D. 5,920 ft.

Jefferson County

Saline Township: L. L. Sapp 1 Iddings heirs, NW Sec. 13, dry, Berea, T.D. 685 ft.

Knox County

Brown Township: Allen Willey 1 Margaret Rinehart, Sec. 3, 1,050,000 cu. ft. gas, Clinton 2,720-40 ft., T.D. 2,745 ft.

Butler Township: H. E. Perkins 1 W. H. Lepley, Sec. 7, dry, Clinton, 2,972-94 ft. and 3,008-16 ft.

Licking County

Madison Township: Shuff & Bucy 1 G. W. Beall, second quarter, dry, Clinton 2,515-41 ft., T.D. 2,575 ft.

Newton Township: H. Penick et al 5 Levi Lynn, fourth quarter, 400,000 cu. ft. gas, shot, Newburg 2,217 50 ft.

Mary Ann Township: Armbruster & Stricker 6 J. R Davis, fourth quarter, dry, Berea, T.D. 600 ft.

Lorain County

Ridgeville Township: Edson & Sons 1 Grace Winckles, Lot 33, no Clinton sand, T.D. 2,478 ft.

Huntington Township: Ohio Fuel 1 Savings & Loan, Lot 9, no Clinton sand, T.D. 2,658 ft.

Medina County

Spencer Township: East Ohio 1 A. T. Queen, Sec. 11 360,000 cu. ft. gas, shot, Clinton, T.D. 2,752 ft.

Meigs County

Salem Township: Downie et al 2 H. E. Miller, Sec. 2. 230,000 cu. ft. gas, Salt sand, T.D. 644 ft.

Muskingum County

Harrison Township: Ohio Fuel 1 Phoebe J. Wentz Sec. 14, dry, Clinton 4,243-68 ft., T.D. 4,326 ft.

Monroe County

Wayne Township: Bartenschlog & Kovert 2 Henr

(Continued on Page 100)

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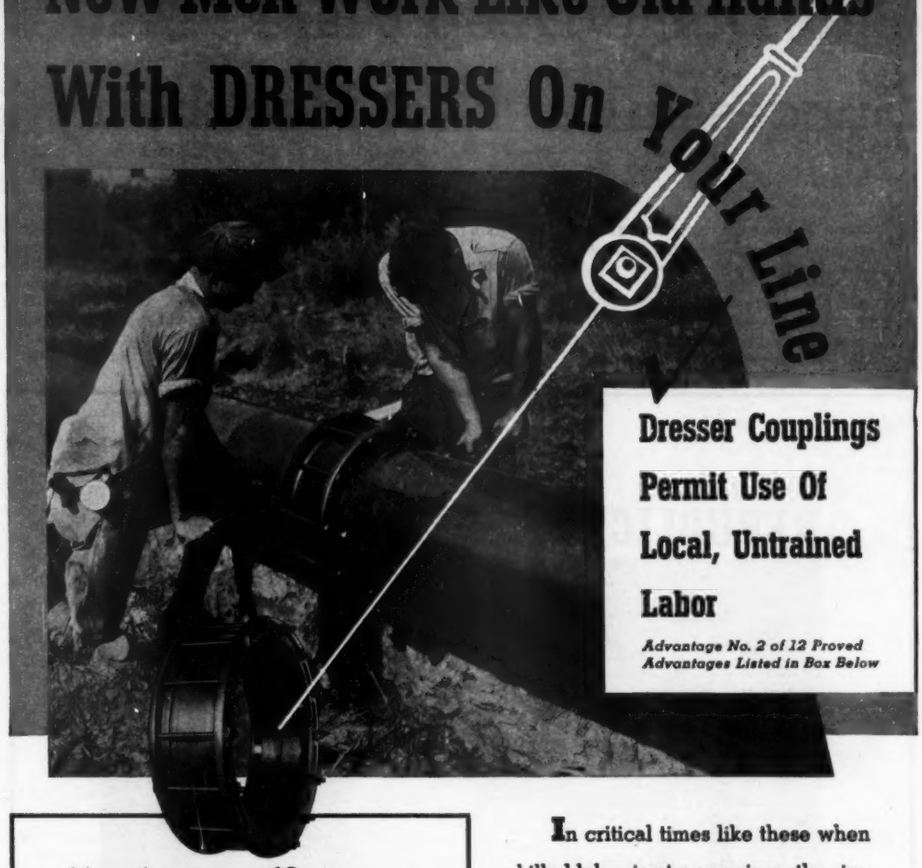

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LOUISIANA GULF COAST

Salt Dome Deep Flank Test Successful at East Hackberry

By F. L. SINGLETON

NEW ORLEANS, La., Nov. 24.—Deeper exploration around the flanks of known salt-dome structures continues to add to the reserves of the Louisiana Gulf Coast district. The latest discovery was made on the northeast flank of the East Hackberry dome, Cameron Parish, where Gulf 28-A M. P. Erwin is flowing at the daily rate of 450 bbl. of 37-gravity oil through a $\frac{1}{4}$-in. choke from perforated casing opposite the Oligocene sand at 11,080-90 ft. Tubing pressure was 1,950 lb. Although this particular flank of the dome has been drilled extensively, most of the production has been from various sands above 9,200 ft. First production on the structure was opened in 1927 from the Miocene sand, and subsequent development has opened additional sands at intervals from 2,500 ft. to 9,200 ft.

Deep-sand production on the old Jennings dome, Acadia Parish, was extended several hundred feet east with the completion of Stanolind Oil & Gas Co. 121 Crowley Oil & Mineral Co., completed for an initial production of 307 bbl. daily through a $\frac{1}{4}$-in. choke. Total depth of the well is 8,000 ft., and the well was washed in after tubing was set at 7,554 ft. Location is in 48-9s-2w.

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SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Fields	20	4,829	141,915
Dry holes: Fields	8	.....	58,138
Total	28	.....	200,053

Material is being moved in for an interesting deep test on the north flank of the Bayou Blue dome, Iberville Parish. The well is to be drilled by the Superior Oil Co. of California on the Schwing Lumber & Shingle Co. lease in 68-9s-10e. This will be the first deep test to be drilled on the north flank, being a short distance north of shallow production located on top of the dome. On the south flank, Danciger Oil & Refining Co. is reported to have obtained a farmout lease from a major company, and is obligated to drill a deep test.

Dry Gas Field Found in Delta District

A dry-gas field was opened in the Delta district, Plaquemines Parish, as Texas 1-A La Fourche Basin Levee district, located in the Hackberry Bay area, flowed an estimated 1,000,000 cu. ft. of gas daily through a $\frac{1}{4}$-in. choke. This well was drilled to a total depth of 11,495 ft., and production is from perforated casing opposite sand at 2,500-28 ft., and at 2,460-90 ft. Gas will be used by the company as fuel for 1-B La Fourche Basin Levee district, located several thousand feet to the north in 29-19s-24e. The discovery is located in 32-19s-24e, about 13 miles south of the prolific Lafitte field in Jefferson Parish. Wildcatting in this parish has been very successful during the year as three fields have been opened and a continuation of exploration is expected as several other prospects are scheduled to be drilled.

Pine Prairie Dome Test Watched

On the Pine Prairie dome, Evangeline Parish, interest was centered on Texas 1 Ledanois Land Co., a wildcat located on the west flank where drilling is temporarily halted due to stuck drill stem below 9,700 ft. An electrical survey is reported to have shown a slight "kick" from 9,100-9,200 ft., and the section is expected to be tested after the hole is drilled to a depth below 10,000 ft. The well is located about 2 miles west of east-flank production where several wells are flowing from the Sparta sand at intervals from 8,100-8,300 ft.

West Mermentau Discovery Prepares to Test

H. M. Naylor 1 Acadia Development Co., the discovery well of the West Mermentau field, Acadia Parish, is being prepared for a production test after drilling to a depth of 10,400 ft. The well topped the Marginulina sand at 10,290 ft., and sand showing gas and distillate was cored at 10,285-10,310 ft. Salt water is said to have broken in from old perforations at 9,775 ft., and at the close of the week the hole was being plugged back. The well was originally completed in 1940 at 9,700-11 ft. as a distillate well, but was killed and drilled deeper after production declined due to salt-water intrusion.

Iowa Field Outpost Started

Location for an interesting test was announced for the Iowa field, Jefferson Davis and Calcasieu parishes, by S. W. Richardson, who is moving in material for 1 Lela Tuten in 13-9s-7w. The same operator drilled a dry hole several months ago on the Sweet Lake Land & Oil Co. on the extreme south side of the field and the new test is located on a farmout lease from Shell Oil Co., Inc., about midway between the dry hole and the field proper.

Anse La Butte East Flank Well Testing

On the extreme east flank of the Anse La Butte field, St. Martin Parish, W. R. Davis 3 Voorhies, is reported to be showing some oil while testing through perforated casing at 9,744-58 ft. This is a south offset to the company's 2 Voorhies, completed several months ago to open deep-sand production at 9,430-40 ft.

Development Gets Under Way At Bayou Sale Extension

Additional development is being started in the south extension area of the Bayou Sale field, St. Mary Parish, and locations were being cleared by the Atlantic Refining Co. for 2 St. Mary Land Co., 1,320 ft. south of the company's 1 St. Mary Land Co., completed the

(Continued on Page 86)

Delaware Sand Discovery in West Pecos County Reported

By TOM BARBER

MIDLAND, Tex., Nov. 24.—The wildcat test drilled by Pure Oil Co. at 1-A Frazier, 20 miles southwest of Fort Stockton, may possibly provide Pecos County with its first commercial Delaware sand production. If completed as an oil producer, 1-A Frazier will open the fourth Delaware sand pool in West Texas. In Loving County, both the Wheat and Mason fields derive production from the Delaware, while, in Ward County, the two-well Monroe pool also produces from this same sand.

At last report, the wildcat was drilling below 5,101 ft., in the sand, with 3,300 ft. of fluid in the hole, practically all oil. No free water was reported, and the oil tested 40 gravity. The Delaware sand section was logged at 5,082 ft. and at that depth the hole carried 1,000 ft. of oil. In deepening to 5,090 ft., the oil rose to 1,500 ft. A show of water was encountered in the Delaware lime after setting casing at 5,040 ft. Operator is reported planning to drill ahead until water is found.

No. 1-A Frazier is being drilled on a 16,000-acre block, which has been surveyed by seismograph. Location is 663 ft. out of the SW cor. Section 31, Block 40, Township 10, T.&P. Survey.

SUMMARY OF COMPLETIONS

Southern West Texas

	No.	Bbl.	Footage
Oil wells: Foster	2	612	8,595
Keystone	5	1,178	17,052
North Cowden	5	2,930	22,641
South Magnolia-Sealy	2	483	5,905
Other fields	8	4,942	31,844
Dry holes: Todd Deep	1	.....	6,367
Total	23	.....	92,404

Northern West Texas

	No.	Bbl.	Footage
Oil wells: Iatan	3	400	8,547
Slaughter	21	22,509	105,397
Wasson	5	1,652	25,676
Other fields	4	1,607	17,230
Total	33	.....	156,850

Texas Panhandle

	No.	Bbl.	Footage
Oil wells: Fields	17	3,706	51,330
Gas wells: Fields	2	*39.4	6,294
Dry holes: Fields	2	.....	6,638
Total	21	.....	64,262

Southeast New Mexico

	No.	Bbl.	Footage
Oil wells: Fields	1	106	5,000
Dry holes: Fields	2	.....	4,718
Wildcats	1	.....	3,701
Total	4	.....	13,419

*Million cu. ft.

Second Well in Sand Hills Link Area Being Tested

A 5,000-gal. acid treatment was scheduled at the end of the week for Gulf 2-B Tubb, Section 28, Block B-27, P.S.L. Survey, in the sector thought to link the Sand Hills Ordovician pool of southwestern Crane County, with a south-extension area. Failure of Gulf 6-A Tubb on the south edge of the Sand Hills Ordovician pool proper, however, has lessened prospects that the pools will be joined.

A north offset to the discovery well of the so-called link area, 2-B Tubb is shut in at 5,665 ft., preparing for acid treatment. On a 4-hour test before being shut in, the prospect flowed an average of 33.12 bbl. of 38.5-gravity oil, with gas volume ranging from 758,000 to 828,000 cu. ft. daily.

Abell Pool Extended Southeast

Apparently assuring a ¼-mile southeast extension to the main part of the Abell Ordovician pool in Pecos County, Magnolia 2 Bowman, early in the week, topped the pay sand at 5,243 ft. The test cored from 5,221-38 ft., recovering 15 ft. of formation with no shows. A second core from 5,238-53 ft. had full recovery and found the bottom 10 ft. to be soft, brown, oil-bearing sand. Operator cemented 7-in. casing at 5,243 ft., on top of the pay section, and is now waiting on cement. No. 2 Bowman is 330 ft. from the northeast line and 1,600 ft. from the northwest line of the SW½ of the N½ of Section 5, Block 3, H.&T.C. Survey.

Wildcats Staked in Crockett And Ector Counties

Location was made last week by J. B. Moncrief for a 6,500-ft. wildcat on the Gilbert M. Couch ranch in Crockett County, 8 miles southwest of Ozona. The test will be drilled in the C NW NE Section 30, Block QP, G.C.&S.F. Survey, on a 3,000-acre farmout lease, from the Texas Co.

The 6,500-ft. contract is expected to permit testing of all sections of the Permian. There is also a possibility the well may be carried to 8,500 ft. to test the Ordovician formations. Nearest production is in the two-pay Todd pool, 15 miles to the north.

Six miles west of the south end of the Goldsmith pool in Ector County, Russell C. Conklin and Reese Cleveland have staked location for 1 E. R. Thomas. The wildcat, contracted to 8,500 ft., is located in the NE¼ of Section 18, Block 45, Township 1s, T.P. Survey, on farmout acreage from Cities Service Oil Co.

SOUTHERN WEST TEXAS COMPLETIONS

(24-hour rating based on last 3 hours of 6-hour gage)

Fields

Abell, Pecos County: Phillips 1 Crank, elev. 2,392 ft., 871 bbl., ½-in. choke, top Tulip Creek 4,835 ft., pay 5,114-34 ft., T.D. 5,447 ft.

Apco-Warner, Pecos County: Superior Oil Co. 1 V. W. Crockett, elev. 2,463 ft., 1,086 bbl., ¾-in. choke, top Ellenburger 4,630 ft., 2,000 gal. acid 4,675-4,770 ft., T.D. 4,851 ft.

Estes, Ward County: Gulf 152 Estes, elev. 2,618 ft., 117 bbl., 240-qt. shot 2,540-2,605 ft., T.D. 2,632 ft.

Foster, Ector County: Atlantic 16 Henderson, elev. 2,918 ft., 321 bbl., 720-qt. shot 4,180-4,310 ft., T.D. 4,320 ft.

Cities Service 3-B Bagley, elev. 2,969 ft., 291 bbl., 10/32-in. choke, 380-qt. shot 4,163-4,275 ft.

Jordan, Ector County: Gulf 18-B Connell, elev. 2,850 ft., 664 bbl., 880-qt. shot 3,365-3,640 ft., P.B. from 3,683 ft.

Keystone, Winkler County: M. J. Bashora 7-A fee, elev. 2,889 ft., 215 bbl., ½-in. choke, 490-qt. shot 3,070-3,252 ft., T.D. 3,275 ft.

S. W. Richardson 2 Jenkins, elev. 2,960 ft., 148 bbl., ½-in. choke, 460-qt. shot 3,306-3,452 ft., old well drilled deeper.

S. W. Richardson 11-B Walton-Humble, elev. 2,958 ft., 30-bbl., 155-qt. shot 3,396-3,450 ft., old well drilled deeper.

S. W. Richardson 7 Walton, elev. 2,971 ft., 468 bbl., 1-in. choke, 380-qt. shot 3,264-3,388 ft., T.D. 3,405 ft.

J. R. Sharp 8 Jenkins-Gulf, elev. 2,975 ft., 317 bbl., ½-in. choke, 390-qt. shot 3,320-3,460 ft., T.D. 3,470 ft.

McCamey, Pecos County: T. P. Coal & Oil Co. 16-A Lane, elev. 2,577 ft., 90 bbl., pumping, pay 2,085-2,110 ft., old well drilled deeper.

North Cowden, Ector County: Broderick & Calvert 1-B O. B. Holt, elev. 3,105 ft., 395 bbl., 95-qt. shot 4,308-41 ft.

Stanolind 78 J. M. Cowden, elev. 3,064 ft., 250 bbl., 165-qt. shot 4,135-90 ft.

Stanolind and Magnolia 1 O. B. Holt, elev. 3,070 ft., 840 bbl., 750-qt. shot 4,325-4,625 ft., T.D. 4,655 ft.

Stanolind & Magnolia 2 Holt, elev. 3,071 ft., 508 bbl., 905-qt. shot 4,355-4,660 ft., T.D. 4,675 ft.

Texas 16 O. B. Holt, elev. 3,094 ft., 937 bbl. oil and 4 per cent water, 625-qt. shot 4,460-4,780 ft.

Sand Hills-Permian, Crane County: Humble 64 Tubb, elev. 2,609 ft., 1,539 bbl., 500 gal. acid 4,340-4,426 ft.

South Magnolia-Sealy, Ward County: Magnolia 4-42 Sealy, elev. 2,679 ft., 317 bbl., ½-in. choke, top Yates 2,584 ft., 250 gal. acid 2,933-36 ft., T.D. 2,953 ft.

Stanolind 2 Standard Oil, elev. 2,645 ft., 166 bbl., ¼-in. choke, pay 2,947-52 ft.

Todd deep, Crockett County: Amerada 1-D Todd, elev. 2,467 ft., dry at 6,367 ft.

Amerada 1-F Todd, elev. 2,475 ft., 388 bbl., pay 5,714-6,060 ft.

World, Crockett County: Garrett M. Smith 2-C Powell elev. 2,785 ft., 187 bbl. oil and 23 per cent water, pumping, 500 gal. acid 2,642-35 ft.

SOUTHERN WEST TEXAS ACTIVE WILDCATS

Crockett County: Amerada 1-G Todd estate, G.C.&S.F. Sur., Sec. 15, Blk. WX, 660 ft. from S and E lines. Ordovician test, drilling 315 ft.

Humble 1 J. W. Owens, SW SE Sec. 8, Blk. GG, H.E. &W.T. Sur., drilling 1,152 ft.

Jacobs & Gibson 1 University, Sec. 5, Blk. 29, University Sur., 990 ft. from S and E lines, drilling 850 ft.

J. S. Pittman 1 Bouscaren, 467 ft. from N and W lines, Sec. 29, Blk. HH, H.E.&W.T. Sur., 2,500-ft. test, drilling 2,000 ft.

Ector County: Oil Well Drilling Co. 1 J. L. Johnson T.&P. Sur., Blk. 14, Sec. 48, Twp. 1s, 467 ft. from N and W lines, 4,500-ft. test, drilling 2,255 ft.

Glasscock County: E. M. Wahlenmaier 1 Texas Ld. & Tr., 467 ft. from W and S lines, Sec. 15, Blk. 34, T.&P. Sur., 3,500-ft. test. drilling 3,115 ft.

Irion County: B. C. Mann 2 Read, Sec. 3, Blk. 17, H.& T.C. Sur., 2,310 ft. from N and 660 ft. from W lines of section, 700-ft. test.

Pecos County: Cardinal Oil 1-3 University, 1,715 ft. from N and 2,370 ft. from W lines, Sec. 3, Blk. 17, University Sur., S.D. 1,588 ft., waiting orders after P.B. from 1,604 ft.

J. L. Cooper 1 University, 330 ft. from S and E lines, Sec. 13, Blk. 16, University Sur., drilling 1,485 ft.

Gulf 2 Millar, C NW SE Sec. 43, Blk. 11, H.&G.N. Sur., Ordovician test, drilling 4,315 ft.

Jameson & Pollard 1 University, 1,980 ft. from W and S lines, Sec. 34, Blk. 27, University Sur., 3,000-ft. test, spudded in and S.D.

Regan County: Amerada 1-RB University, 660 ft. from N and W lines of NE Sec. 8, Blk. 48, University Sur., drilling 7,494 ft.

Amerada 1-RC University, 660 ft. from S and E lines, NE Sec. 4, Blk. 48, University Sur., S.D. 2,420 ft. after P.B. from 2,790 ft.

Sutton County: S. B. Roberts 1 George Allison, NW NE Sec. 44, Blk. K, G.H.&S.A. Sur., straightening hole 760 ft.

Upton County: Plymouth 1 Alford, C Sec. 50, Blk. 12, P. B. Scott Sur., running 7-in. casing 10,194 ft.

Ward County: Shell 1 Sealy-Smith, 2,310 ft. from S and 330 ft. from E lines, Sec. 38, Blk. A, G.M.M.B.&A. Sur., Ordovician test, drilling 7,297 ft.

Winkler County: Magnolia 20 States-Walton, NW cor. Sec. 4, Blk. 3-B P.S.L. Sur., testing 5,484 ft., P.B. from 8,445 ft.

Sam Weiner 1 Halley, NW NE Sec. 7, Blk. 11-B, P.S.L. Sur., S.I. 3,023 ft.

Union Oil 1 W. C. Driver, Sec. 19, Blk. B-6, P.S.L. Sur., 660 ft. from N and W lines of section.

Wildcatting in Northern West Texas Spreads

Wildcat development in northern West Texas continued to expand this week with the location of a new Dawson County wildcat. The Placid Oil Co. of Shreveport, La., a subsidiary of the H. L. Hunt Oil Co., has staked location for 1 Higginbotham, 15 miles southwest of Lamesa. Footage has been announced as 694 ft. from the north and west lines of Labor 13, League 269, Moore C.S.L. Survey. Cellar and pits have been dug and drilling will start as soon as possible. No. 1 Higginbotham is contracted to 5,000 ft.

In the meantime, Ray Albaugh and Richmond Drilling Co. 1 J. J. Handley, Section 36, Block M, E.L. Survey, which last week showed indications of opening a Permian lime pool in the northwestern part of Dawson County, is reported cleaning out 38 ft. off bottom. In cleaning out, operators swabbed 15 bbl. of oil and 2 bbl. of water in 3 hours. No. 1 Handley is bottomed at 4,980 ft. Previously, the test was given a 700-qt. nitro shot in the pay section from 4,910-77 ft.

Yoakum County Wildcat Prepares to Test

During the week, operator at Sinclair Prairie 1 C. J. Kleiner, Yoakum County wildcat, 3½ miles northwest of the Ownby pool, ran a 30-minute drill-stem test, recovering 450 ft. of drilling fluid only. In drilling to 5,600 ft., total depth, the test encountered intermittent shows below 5,366 ft. At the end of the week, operator was preparing to test by bailing. Location is 330 ft. out of the NW cor. of Section 436, Block D, J. H. Gibson Survey.

Lubbock County Test Cores Additional Shows

In Lubbock County, L. C. Harrison and Tobe Foster 1 Steck, Section 7, Block A, J. H. Gibson Survey, 3½ miles north of the Harrison 1 Nairn discovery, is drilling below 5,120 ft., after encountering several slight shows of oil. In drilling to 4,998 ft., the test found small oil shows but a core, taken from 4,998-5,015 ft., recovered only hard lime. Drilled to 5,025 ft., it cored again to 5,042 ft., recovering lime and anhydrite with slight stain. Another core from 5,042-53 ft., returned very hard lime. No. 1 Steck is thought to be in the Clear Fork.

NORTHERN WEST TEXAS COMPLETIONS

(24-hour rating based on last 3 hours of 6-hour gage)

Fields

Cedar Lake, Gaines County: Stanolind 7 Rayner, elev. 3,102 ft., 684 bbl., 540-qt. shot 4,595-4,830 ft., T.D. 4,835 ft.

Iatan, Howard County: Bond & Awoeb 1 L. C. Denman, elev. 2,269 ft., 164 bbl. oil and 2.4 per cent water, 678-qt. shot 2,692-2,892 ft., old well drilled deeper.
Sinclair 75 Dodge, elev. 2,253 ft., 150 bbl., 600-qt. shot 2,639-2,795 ft., T.D. 2,805 ft.
Sinclair 8 Texas Land & Mtg., elev. 2,325 ft., 86 bbl., pumping, 620-qt. shot 2,644-2,840 ft., T.D. 2,850 ft.
Owenby, Yoakum County: George P. Livermore 2 Owenby, elev. 3,566 ft., 207 bbl., ⅜-in. choke, 1,550 gal. acid 5,240-73 ft., T.D. 5,355 ft.
Seminole, Gaines County: Amerada 14 Turlin, elev. 3,365 ft., 596 bbl., ½-in. choke, 160-qt. shot 5,196-5,300 ft.
Shanon Ridge, Mitchell County: William Brookover 1 Ed S. Strain, elev. 2,241 ft., 120 bbl., pumping. 680-qt. shot 1,664-1,740 ft.
Slaughter, Cochran County: Atlantic 25 Boyd, elev. 3,663 ft., 1,249 bbl., 2-in. casing outlet, 10,000 gal. acid 4,970-5,063 ft.
Atlantic 29 Boyd, elev. 3,671 ft., 1,449 bbl., 2-in. casing outlet, 10,000 gal. acid 4,970-5,067 ft.
Honolulu Oil 11-18 Igot Smith, elev. 3,556 ft., 1,018 bbl., 2½-in. casing outlet, 10,000 gal. acid, 4,999-5,037 ft.
Magnolia 17 Woodley, elev. 3,683 ft., 864 bbl., 3-in. casing outlet, 10,500 gal. acid 4,945-95 ft.
Slaughter, Hockley County: Honolulu 17-B Mallett, elev. 3,711 ft., 1,050 bbl., 2½-in. casing outlet, 10,000 gal. acid 4,940-5,020 ft.
Honolulu 25-B Slaughter, elev. 3,527 ft., 1,566 bbl., 2-in. casing outlet, 10,000 gal. acid 4,925-5,015 ft.
Magnolia 6-F Mallett, elev. 3,605 ft., 933 bbl., 3-in. casing outlet, 10,500 gal. acid 4,980-5,033 ft.
Magnolia 16-J Mallett, elev. 3,624 ft., 1,173 bbl. oil and 3 per cent water, 3-in. casing outlet, 10,500 gal. acid 4,980-5,044 ft.
S. W. Richardson 9 Slaughter, elev. 3,568 ft., 466 bbl., 1-in. choke, 27,000 gal. acid 4,885-4,960 ft., T.D. 4,980 ft.
S. W. Richardson 4 Peck, elev. 3,579 ft., 657 bbl., 2-in. casing outlet, 7,500 gal. acid 4,880-4,953 ft.
Stanolind 1 A. J. Richards, elev. 3,574 ft., 99 bbl., ¾-in. choke, 8,000 gal. acid 4,870-4,950 ft.
Stanolind 35-B Slaughter, elev. 3,535 ft., 726 bbl., 2-in. casing outlet, 8,500 gal. acid 4,975-5,035 ft.
Stanolind 37-B Slaughter, elev. 3,530 ft., 1,152 bbl., 2-in. casing outlet, 8,500 gal. acid 4,935-5,008 ft.
Stanolind 39-B Slaughter, elev. 3,533 ft., 701 bbl., 2-in. casing outlet, 8,500 gal. acid 4,965-5,033 ft.
Texas 11-B Mallett, elev. 3,586 ft., 2,009 bbl., 12,000 gal. acid 4,960-5,025 ft.
Texas 16-E Mallett, elev. 3,628 ft., 1,126 bbl., 12,000 gal. acid 4,985-5,055 ft.
Texas 17-E Mallett, elev. 3,594 ft., 1,317 bbl. oil and 4 per cent water, 10,500 gal. acid 4,950-5,029 ft.
Texas 49 Slaughter, elev. 3,529 ft., 2,111 bbl., 14,000 gal. acid 4,950-5,010 ft.
Texas 52 Slaughter, elev. 3,536 ft., 104 bbl. oil and 3.15 per cent water, 12,000 gal. acid 4,940-5,010 ft.
Texas 57 Slaughter, elev. 3,577 ft., 1,165 bbl., 9,500 gal. acid 4,920-5,005 ft.
Texas 58 Slaughter, elev. 3,560 ft., 1,574 bbl. oil and 4.53 per cent water, 13,000 gal. acid 4,925-5,030 ft.
Wasson, Gaines County: Carter and Phillips 3-A Wasson, elev. 3,567 ft., 480 bbl., ½-in. choke, 3,000 gal. acid 4,889-4,970 ft.
Wasson, Yoakum County: American Liberty 4 Futch, elev. 3,651 ft., 108 bbl. oil and 5 per cent water, 10,000 gal. acid 5,020-5,231 ft.
Drilling & Exploration Co. 1-B Hudson, elev. 3,675 ft., 403 bbl., ⅞-in. choke, 12,000 gal. acid 4,900-5,110 ft.
Humble 13 Randall, elev. 3,644 ft., 326 bbl., ½-in. choke, 9,000 gal. acid 5,020-85 ft., T.D. 5,100 ft.
Magnolia 11 Bennett, elev. 3,590 ft., 335 bbl., 1-in. choke, 6,000 gal. acid 5,170-5,265 ft.

NORTHERN WEST TEXAS ACTIVE WILDCATS

Andrews County: Fuhrman 1 M. A. Thornberry, 330 ft. from W and S lines, Sec. 23, Blk. A-42, P.S.L. Sur., 4,600-ft. test.
Fullerton Oil 1 Wilson, C NE SW SE Sec. 15, Blk. A-32, P.S.L. Sur., Ordovician test, drilling 4,500 ft.
Bailey County: Broderick & Calvert 1 G. H. Hayward. 4,167 ft. from W and 1,389 ft. from S lines, Lge. 73, Sutton C.S.L. Sur., 5,500-ft. test, S.D., moving in rotary.
Borden County: C. E. Hyde 1 Miller-Loonev. 330 ft. from N and W lines, Sec. 10, Blk. 33, T.&P. Sur.
Anderson-Prichard 1 Johnson & Clayton, Sec. 1, Blk. 1, John DeShazo Sur., 660 ft. from SW cor., Sec. 23, Blk. 10, E.L.&R.R. Sur., testing, T.D. 4,503 ft.
M. L. Richards 1 W. R. Dunn, SW NE Sec. 307, Blk. 97, H.&T.C. Sur., 3,200-ft. test, S.D. 2,865 ft., orders.
Briscoe County: Phillips 1 Montague, NE NE Sec. 6, Blk. B-4, A.B.&M. Sur., preparing to run 9⅝-in. casing 4,900 ft.
Crosby County: George Callihan and C. L. Wagner 1 E. M. Wahlenmaier, 460 ft. from N and E lines, Sec. 3, Blk. D-15, Waxahachie Tap Sur., drilling 4,027 ft.
Dawson County: Ray Albaugh 1 Handley, 1,980 ft. from W and 660 ft. from S lines, Sec. 36, Blk. M, E.L. Sur., 5,250-ft. test, testing, T.D. 4,977 ft.
Gaines County: Amerada 1 Ruth Hudson, Sec. 60, P.S.L. Sur., 660 ft. from N and W lines of section, 7,000-ft. test, drilling 4,002 ft.
Amon G. Carter 4-D Wasson, NW SE Sec. 50, Blk. AX, P.S.L. Sur., testing 11,108 ft.
Likins & Hall 1 Jones, SW NW Sec. 13, Blk. A-7, P.S.L. Sur., 7,200-ft. test, drilling 5,230 ft.
Hockley County: Anderson-Prichard-American Drilling Co. 1 Ellwood, NW NW NW Sec. 15, Blk. A, R. M. Thomason Sur., 5,500-ft. test, drilling 4,196 ft.
Lubbock County: Harrison & Foster 1 Steck, SE SE Sec. 7, Blk. A, John Gibson Sur., 5,500-ft. test, drilling 4,915 ft.
Mitchell County: H. B. Owenby Drlg. 1 Morrison Oil & Rovalty, 660 ft. from S and E lines, SE NE Sec. 34, Blk. 29, T.&P. Sur., S.D. 3,120 ft., orders.
Terry County: American Drlg. 1 W. T. Hufnall, 467 ft. from S and E lines, Sec. 14, Blk. D-14, C.&M. Sur., 5,500-ft. test, drill pipe stuck 5,435 ft.

Twenty-One Wells Completed In Panhandle, Twenty-Three Started

AMARILLO, Tex., Nov. 24.—Of the 21 wells completed in the district during the week, 17 were for oil, 2 for gas, and 2 were dry. The 17 producers rated a daily potential of 3,706 bbl. and the gas wells tested 39,400,000 cu. ft. Gray County had nine completions, two being dry. However, both wells were outposts where production has not been reached. Hutchinson County had nine completions, Moore County two, and Wheeler County one.

During the week 23 new locations were announced for the Panhandle district. Carson County received four new locations, Gray County eight, Hutchinson County nine, and Moore County two. Wheeler County was the only area left out of the announcements.

TEXAS PANHANDLE COMPLETIONS

(24-hr. gage)

Gray County: Clayton & Dwyer 9 Lovett, Sec. 36, Blk. B-2, H.&G.N. Sur., 390 bbl., pumping, 540-qt. shot 2,880-2,990 ft.
Continental 6 Brown, Sec. 115, Blk. 3, I.&G.N. Sur., 154 bbl., pumping, 580-qt. shot 3,190-3,290 ft.
Lefors Petroleum Co. 6 East Bull, Sec. 8, Blk. B-2, H.&G.N. Sur., 34 bbl., pumping, pay 2,895-2,920 ft.
Skelly 138 Schaffer, Sec. 171, Blk. 3, I.&G.N. Sur., 414 bbl., pumping, 307-qt. shot 3,185-3,242 ft.
Skelly 4 Taylor, Sec. 7, Blk. B-2, H.&G.N. Sur., 104 bbl., pumping, 500-qt. shot 2,900-99 ft., T.D. 3,001 ft.
Smith Bros. 1 Sailor, Sec. 81, Blk. 3, I.&G.N. Sur., dry at 3,611 ft.
Stanolind 1 Lovett, Sec. 36, Blk. B-2, H.&G.N. Sur., 337 bbl., pumping, 320-qt. shot 2,975-3,080 ft.
Texas 7 Pope, Sec. 173, Blk. 3, I.&G.N. Sur., 152 bbl., pumping, 615-qt. shot 3,169-3,309 ft.
Warner Oil Co. 3 Taylor, Sec. 8, Blk. H, A. W. Wallace Sur., dry at 3,027 ft.
Hutchinson County: Armer Inc. 2 Luginbyhl, Sec. 4, Blk. J, T.W.&N.G. Sur., 44 bbl., pumping, pay 3,076-3,171 ft.
Continental 7 E. B. Johnson, Sec. 5, Blk. 1, B.&B. Sur., 567 bbl., pumping, pay 3,049-53 ft.

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MORSE CHAIN COMPANY ITHACA N. Y. DIVISION BORG WARNER CORP

J. E. Crosbie, Inc. 5 Cockrell, Sec. 14, Blk. B-3, D.&S.E. Sur., 192 bbl., pumping, 420-qt. shot 2,760-2,850 ft.

Danube 7 Sanford, Sec. 78, Blk. 46, H.&T.C. Sur., 177 bbl., pay 2,800-18 ft.

Danube 8-A Sanford, Sec. 78, Blk. 46, H.&T.C. Sur., 188 bbl., pumping, 1,500 gal. acid 2,792-2,810 ft.

Phillips 86 Cockrell, Sec. 11, Blk. B-3, D.&S.E. Sur., 167 bbl. oil and 15 bbl. water, pumping, 460-qt. shot 2,864-2,978 ft.

Phillips 87 Cockrell, Sec. 111, Blk. B-3, D.&S.E. Sur., 272 bbl., pumping, 580-qt. shot 2,960-3,106 ft.

Phillips 6 Staples, Sec. 25, Blk. M-23, T.C. Sur., 284 bbl., pumping, 440-qt. shot 3,191-3,261 ft., T.D. 3,264 ft.

Phillips 8 Supreme, Sec. 25, Blk. M-3, T.C. Sur., 162 bbl. oil and 19 bbl. water, pumping, 440-qt. shot 3,210-80 ft.

Moore County: Phillips 1 Caludine, Sec. 318, Blk. 44, H.&T.C. Sur., 9,800,000 cu. ft. gas, 255-qt. shot 2,925-3,085 ft., T.D. 3,091 ft.

Shamrock Oil & Gas Corp. 1 Fowlston, Sec. 239, Blk. 3-T, T.&B. T.&N.O. Sur., 29,600,000 cu. ft. gas, 7,000 gal. acid 2,910-3,154 ft., T.D. 3,203 ft.

Wheeler County: Skelly 2 Molly Harvey, Sec. 72, Blk. 13, H.&G.N. Sur., 68 bbl., pumping, 10-qt. shot 2,079-90 ft., T.D. 2,168 ft.

Sixteen Locations Made In Southeast New Mexico

HOBBS, N. M., Nov. 24.—New work in Southeast New Mexico took a jump last week as locations for 16 tests were announced. Seven were in Lea County, while Eddy County added nine, one a wildcat.

The Eddy wildcat is Keyes & Atwood 1-B Keyes, 2,310 ft. from the south line and 330 ft. from the east line of 33-20s-30e. It is 2¼ miles southeast of the Barber pool.

Greatest increase in activity was registered by the Red Lakes pool of Eddy, which gained four new starts. On the other side of the ledger, the pool witnessed a failure in Comanche Drilling Co. 20 Berry, 24-17s-27e, which struck a hole full of water in lime from 626 to 630 ft.

Outpost Started North of Grayburg Pool

The Grayburg pool of Eddy was credited with two more locations. Sanders Brothers are spudding a semiwildcat north of Grayburg production. It is 2 Harry Leonard, 660 ft. out of the SW cor. of 34-16s-30e, a quarter mile south of 1 Leonard, discovery of a new lime area 2¾ miles north of the pool.

Nay Hightower 1 Grier, sand pool opener 2¾ miles north of the Grayburg pool and 2 miles east and ½ mile north of the 1 Leonard, after having been shut in for 3 days, was opened and flowed 330 bbl. of oil in 33 hours through a 2-in. outlet off casing. Operators are cleaning out and testing. Located in the NW cor. of 31-16s-31e, the well logged pay from 3,062 to 3,072 ft. and from 3,108 to 3,118 ft.

A wildcat 2 miles north of Grayburg production, Sanders Brothers 1 M. W. Evans, 4-17s-30e, is drilling below 2,290 ft. in anhydrite. It showed water in red sand from 2,172-2,214 ft.

Four Wildcats Under Way

P. B. English 1 Jones, wildcat south of the Shugart pool in Eddy, is drilling past 2,080 ft. in salt. It is in 24-19s-31e.

Seeking short east extensions of the Maljamar pool, Drilling & Exploration Co. staked 2-A-24 Johns, 660 ft. from the south line and 1,980 ft. from the west line of Section 24-17s-32e, and 3-B-24 Johns, 1,980 ft. from the south and west lines of the same section.

Western Gas Co. 1 Combest, Lea wildcat in 35-3s-36e, is fishing for drill pipe, bottomed at 1,966 ft.

SOUTHEAST NEW MEXICO COMPLETIONS

Wildcat

Lea County: Culbertson & Irwin 1 Welch, 31-19s-34e, dry, T.D. 3,701 ft. in lime, sulfur water.

Fields

South Lovington, Lea County: Skelly 1-S State, 35-16s-36e, flowed 106 bbl. through 17/64-in. choke on tubing, pay 4,680 ft., acid, T.D. 5,000 ft.

Maljamar, Lea County: Phillips 2 Maljamar-State, 16-17s-32e, dry, T.D. 4,075 ft., P.B. 4,052 ft., shot.

Red Lakes, Eddy County: Comanche Drilling 20 Berry, 24-17s-27e, dry, T.D. 630 ft., lime 626 ft.

California Fields

(Continued from Page 75)

gravity, 5 per cent cut, T.D. 4,896 ft., P.B. 4,030 ft., perf. 4,008-4,226 ft., 7-in. casing cemented 4,250 ft., milled through 7-in., set whipstock and redrilled to 4,230 ft., completed in Santa Maria Valley oil sand of Miocene age.

Union 5 Stinson, 28-10n-34w, flowed 1,240 bbl., 14.9-gravity, 2.1 per cent cut, 38/64-in. bean, pressures 150/450 lb., T.D. 5,243 ft., perf. 4,773-5,241 ft., completed in Santa Maria Valley oil sand of Miocene age.

Ventura Avenue, Ventura County: Shell 144 Taylor, 29-3n-23w, flowed 2,360 bbl., 31-gravity, 2 per cent cut, 2,230,000 cu. ft. gas, 128/64-in. bean, pressures 200/800 lb., T.D. 8,200 ft., 1,499 ft. 5-in. liner perf. at intervals 6,820-8,286 ft., completed in formation of Pliocene age.

COASTAL DISTRICT WILDCATS

Aliso Canyon district, Los Angeles County: Associated 1 Mission, 26-3n-16w, drilling 6,997 ft. in siltstone and gray sand, elev. 2,709 ft.

Shell 2 Mission, 25-3n-16w, rigging up and preparing to spud.

Castaic district, Los Angeles County: Texas 1 Fernando, 11-4s-17w, drilling 5,292 ft. in sand and shale, spot coring, elev. 1,251 ft.

Cat Canyon district, Santa Barbara County: A. E. Bell 1 Gilmore, 23-9n-33w, T.D. 6,180 ft., 7-in. casing cemented 4,930 ft., redrilling in sandy shale 6,061 ft., elev. 767 ft.

Standard 3 Los Flores, 27-9n-33w, T.D. 6,100 ft. in oil sand, rigging up to pump, elev. 1,065 ft.

Union 12 Bell, 27-9n-33w, rig, is offset to Standard's 2 Los Flores.

Union 12 Bell, 27-9n-33w, rig.

Del Valle, Los Angeles County: A. J. O'Dell 1 Val Verde, 9-4n-17w, building rig.

Loma Grande district, Monterey County: Loma Grande Oil Co. 1 Corey, 23-24s-10e, T.D. 3,575 ft. in shale, sidetracked fish and cemented 6⅝-in. casing 3,575 ft., elev. 1,500 ft.

Newhall district, Los Angeles County: Aztec Oil Co. 1 Sanborn, 6-3n-16w, T.D. 6,113 ft. in Miocene sand and sandy shale, swabbed dry, may deepen, elev. 1,516 ft.

R. W. Young 1 Walker, 11-4n-16w, drilling 6,090 ft. in Mint Canyon hard gray sand and hard siltstone showing 18° dips, had oil and gas shows on ditch, top Miocene 5,078 ft., elev. 1,254 ft.

Oak Canyon district, Los Angeles County: Western Gulf 1 Wickham, 31-5n-17w, drilling 7,391 ft. in sand, still above main deep sand, elev. 1,916 ft.

Hathaway Co. 2 Ram, 31-5n-17w, T.D. 8,091 ft. in sand and shale, P.B. 2,259 ft. to whipstock.

Towsley Canyon district, Los Angeles County: Barnsdall and Ambassador Pet. 1 Limebocker, 17-3n-18w, drilling 4,372 ft. in hard sand and shale, landed 9⅝-in. protection string 4,040 ft., elev. 1,680 ft.

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Wildcat Campaign Spreading With Two Possible Strikes

By D. H. STORMONT

DALLAS, Tex., Nov. 24.—The location of six new exploratory tests during the week marked a new high in the current wildcat development program which the East Texas district has been enjoying for the past 5 weeks. Of the 15 wildcats now active in the district, two are preparing to test possible pay horizons.

Completion attempts in an effort to open a new Paluxy sand pool along the Mexia-Talco fault trend at W. B. Hinton and Talco Asphalt Co. 1 S. M. Long in Hopkins County were postponed at the end of the week, awaiting the arrival of equipment. No. 1 Long is bottomed at 4,895 ft. with casing set at that depth. It is reported that casing has already been perforated from 4,740-48 ft., opposite a section of the upper Paluxy sand which showed promise on a drill-stem test and electrical survey.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: East Texas field	1	52	3,605
Hawkins	5	1,110	24,090
East Long Lake	2	170	10,684
Other fields	2	183	9,393
Wildcats	1	355	8,475
Dry holes: East Texas field	2	.....	7,557
Other fields	1	.....	4,325
Wildcats	1	.....	5,560
Total	15	.....	73,689

The wildcat, located in the Acquier Survey, 3 miles west of the town of Birthright, first drew attention when a drill-stem test from 4,699-4,757 ft. recovered mud cut with black oil along with mud and water with slight brackish taste. Operator drilled to present depth and ran an electrical survey, which indicated pay possibilities below 4,740 ft. and water below 4,830 ft.

Testing continued during the week at O. W. Killam 1 E. Bass, which promises a new pay area for the southwestern part of Rusk County. No. 1 Bass was drilled to 4,372 ft. in the Woodbine sand, plugged back to 3,100 ft. and casing was perforated at 2,910-65 ft. to test a stray sand section in the Nacatoch formation.

The test was washed in to flow through ¼-in. tubing choke, making 3 bbl. of 37.4-gravity oil per hour under pressure of 350 lb., equalized. However, when operator attempted to put on ½-in. choke, the test made no oil, showing only gas over a 24-hr. period. Location of the prospect is in the Sanchez Survey, 3 miles north of New Salem and the same distance southwest of the Pleasant Grove pool.

Six New Wildcat Locations Staked

During the week, six wildcat tests were staked in five counties in the district. Of the six exploratory tests staked, Upshur County received two, while Rains, Smith, Leon and Gregg counties reported one each.

Already drilling in Upshur County is O. J. Perren 1 Mrs. R. H. McClelland, located 2,000 ft. from the north line and 2,400 ft. from the west line of a 744-acre tract in the M. del Torres Survey. At the end of the week, 1 McClelland was drilling below 3,200 ft. in shale. The Pecan Gap was logged at 2,607-3,030 ft. Contract depth on the test has not been reported, but it is believed to be a Woodbine sand test.

Upshur County's second wildcat of the week was staked by H. L. Hunt as 1 L. C. McCain on a 7,500-acre farmout block from Tide Water Seaboard. The wildcat, which will test the Georgetown lime, is located 467 ft. from the north and west lines of a 123.7-acre tract in the M. H. Minor Survey, about 3 miles southeast of Lafayette.

With the failure of 1 McCormic, W. W. Avery Survey, B. F. Phillips is preparing to drill a second test in the Friendship area of Smith County. This second test will be drilled on a 50-acre tract bought in fee by Phillips and is located 2,850 ft. from the south line and 4,050 ft. from the east line of the Oscar Hawkins Survey. Surface casing has already been set and at the end of the week, operator was preparing to drill below 200 ft. Contract depth was not disclosed.

Another wildcat was staked by H. L. Hunt in the district during the week. On a block of approximately 7,200 acres, he will drill 1 Joe S. Weakley, scheduled 6,500-ft. test. No. 1 Weakley has been staked 1,086 ft. from the north line and 467 ft. from the west line of a 310-acre tract in the C. C. Sealey Survey.

Materials were being moved in as the week closed for a scheduled Woodbine sand wildcat 2 miles northwest of Emory in Rains County. The test will be drilled by Elbert Williams, Tex Harvey and Tom Hunter as 1 B. R. Hall on a 100-acre tract in the B. Johnson Survey. Actual drilling operations are expected to be under way on or before December 1. The Woodbine sand is expected around 3,800 ft. In the event that the Woodbine sand is found dry and if structural conditions warrant, 1 Hall may be deepened to the Paluxy sand.

Tentative location has been made in Gregg County for a wildcat 2 miles north of Longview. The test was taken by Gregg-Tex Gasoline Co. and Clark Sample on the T. G. Williams lease in the David Hill Survey. Operators will seek gas production.

EASTERN TEXAS COMPLETIONS

Wildcats

Angelina County: K. L. McHenry 1 Southern Pine Lbr., J. G. W. Clayton Sur., dry at 5,560 ft.

Henderson County: British American 1 M. G. Young, Joseph Rice Sur., 355 bbl. oil and 31 bbl. wtaer, ⅝-in. choke, and 4,978,000 cu. ft. gas, top Austin 3,386 ft., Woodbine 4,140 ft., Glen Rose 6,302 ft., Travis Peak 8,475 ft., pay 7,608-24 ft., T.D. 8,475 ft.

East Texas Field

(1-hour gage)

Longview, Upshur County: E. L. Baker 1 H. C. Webb, S. J. McCulloch Sur., dry at 3,728 ft.

C. A. Lee and R. W. Burnett 3 Mike Green, H. W. Augustine Sur., dry at 3,829 ft.

Kilgore, Gregg County: Shell 39-A B. F. Laird, J. Wilkerson Sur., 52 bbl., top Austin 3,503 ft., pay 3,532-75 ft., T.D. 3,605 ft.

Fields

Cayuga, Anderson County: Carter-Gragg Oil Co. 6 C. W. McMahon, J. C. Collins Sur., 132 bbl. in 24 hr., ¼-in. choke, T.D. 4,015 ft.

Hawkins, Wood County: Humble 3-B Christian Women's Board of Missions, J. G. Heard Sur., 104 bbl. in 6 hr., ¼-in. choke, top Austin 4,202 ft., Woodbine 4,280 ft., pay 4,514-4,617 ft., T.D. 4,646 ft.

Humble 1 Alma Holmes, G. Brewer Sur., 107 bbl. in 6 hr., ¼-in. choke, top Austin 4,190 ft., Woodbine 4,460 ft., pay 4,600-4,829 ft., T.D. 4,872 ft.

R. Lacy-S. Price 2 G. Maberry, S. Castleberry Sur., 100 bbl. in 6 hr., ¼-in. choke, pay 4,612-4,849 ft., T.D. 4,857 ft.

Texas 1 Jo Cobb, H. F. Robinson Sur., 99 bbl. in 8 hr., ¼-in. choke, top Austin 4,240 ft., Woodbine 4,440 ft., pay 4,440-4,585 ft., T.D. 4,866 ft.

Texas 1 R. A. and R. M. Cobb, J. G. Heard Sur., 84 bbl. in 6 hr., ¼-in. choke, pay 4,438-4,575 ft., T.D. 4,849 ft.

Long Lake, Anderson County: Hunt Oil Co. 1 Lee Cato, E. Ewing Sur., 51 bbl. in 24 hr., 7/64-in. choke, pay 5,398-5,419 ft., T.D. 5,378 ft.

East Long Lake, Anderson County: Tex Harvey 9 S. E. Cartmel, E. Ewing Sur., 108 bbl. in 24 hr., 7/64-in. choke, top Austin 4,849 ft., Woodbine 5,357 ft., pay 5,402-22 ft.

Tide Water-Seaboard 12 J. O. Monnig, S. Sanches 1-11 Sur., 62 bbl. in 24 hr., 3/32-in. choke, top Austin 4,633 ft., Woodbine 5,100 ft., pay 5,150-5,246 ft., T.D. 5,262 ft.

Talco, Franklin County: Crichton 3 W. E. Hayden, W. Landrun Sur., dry at 4,325 ft.

EAST TEXAS ACTIVE WILDCATS

Fannin County: Damon Oil 1 Chaffin, A. C. Ketchum Sur., 4 mi. NE of Bonham, drilling 1,516 ft.

Freestone County: O. B. Perot 1 Coleman, H. Howard Sur., 2½ mi. SW of Streetman, perf. casing at 3,506 ft.

Hopkins County: W. B. Hinton and Talco Asphalt & Ref. Co. 1 S. M. Long, 4,000 ft. from E and 650 ft. from S lines, W. Acquier Sur., waiting on cement 4,895 ft.

Houston County: C. P. Culmore 1 G. T. Luncy, John Forbes Sur., 1½ mi. SE of Lovelady, 467 ft. out of SE cor. of NE 40-ac. of 310-ac. tract, S.D. 5,010 ft., orders.

Hunt County: J. B. and Ed V. Parsons 1 O. P. Marshall, D. Ausmus Sur., E of Commerce, 475 ft. from N and 112 ft. from W lines, 100-ac. tract, drilling 600 ft.

Lamar County: Whitehead & Dahl 1 Barr, 80 ft. from N and 442 ft. from NE cor., I. Boren Sur., old well drilled deeper, S.D. 3,308 ft., orders.

Leon County: Hunt Oil Co. 1 D. A. Sullivan, F. Ramirez Sur., 467 ft. from S and E lines, 432.5-ac. tract, S.D. 5,055 ft., repairs.

Limestone County: B. F. Weekly 2-A Barron, 660 ft. from NE cor. 320-ac. tract in E. Mabry Sur., testing 5,786 ft.

Zephyr Oil 1 Barron, 337 ft. from W and 300 ft. from SW lines, E. Mabry Sur., S.D. 3,700 ft., waiting orders.

Navarro County: L. T. Davis 1 W. R. Stevenson heirs, T. J. Jourdan Sur., Bazzett area, 330 ft. from N and 999 ft. from W lines, 120-ac. tract, S.D. 105 ft.

Rusk County: O. W. Killiam 1 Bass, J. I. Sanches Sur., 467 ft. from S and 3,200 ft. from E lines of 160-ac. tract, drilling 3,927 ft.

Wood County: R. W. Fair 1 W. T. Boozer, D. T. Fuller Sur., 3 mi. N of Mineola, 467 ft. from S and W lines, 50-ac. tract, drilling 4,005 ft.

Humble 1 J. C. Snow, 467 ft. from W and 2,250 ft. from N lines, J. B. Crain Sur., S.D. 5,023 ft., for work unit.

Objection Raised to Salt Water Disposal Order

By D. H. STORMONT

AUSTIN, Tex., Nov. 24.—The Railroad Commission has announced that effective January 1 it will encourage injection of salt water to the Woodbine sand in the East Texas field. Higher allowables have been assigned to leases in which the salt water is injected. The order is largely patterned after a proposal made by East Texas operators at a hearing on October 6, and which had the approval of both major and independent operators. (The Oil and Gas Journal, Oct. 9, 1941, p. 26.) Announcement of the order was made by the commission following a conference with E. L. De Golyer, Dallas, Tex., conservation director for the Office of Petroleum Coordinator. It is reported that the coordinator's office was greatly interested in the issuance of an order of this type as a means of checking the decline in bottom-hole pressures.

In the opinion of some East Texas operators, two important provisions contained in the proposal submitted by the operators have been omitted in the order as issued. These two provisions were: (1) That the operator of an injection system could receive an added allowable for injecting the water from a lease that contained only marginal wells; (2) that an operator could voluntarily shut in a well producing more than 100 bbl. of brine daily and produce that well's allowable from other wells on the lease, as designated by the commission.

According to recent commission water surveys, almost half of the brine output is being produced by some 750 marginal wells. On a lease that contains only marginal wells, the present order does not offer any inducement to the operator to inject his brine as the wells are producing all the oil they could make. Under the order proposed by the operators, however, the producer would have been permitted to transfer the bonus oil to some other lease; or if this lease was his only one, he could have permitted the operator of an injection system to receive a higher allowable on some of his properties by taking the brine from the lease. As it is, one operator pointed out, the only incentive for the operators of disposal systems (which are nearly all major company owned) to handle brine from leases other than their own is that in so doing they know they are increasing their ultimate oil recovery and delaying the time when their wells must be placed on the pump.

Inclusion of the second provision, it is believed by most East Texas authorities, would have offered a quick solution to the problem of wells that produce large quantities of water. Commission reports show that 70 per cent of the field's daily water output is being produced by wells making less than 10 per cent oil. Thus if these wells could be closed and their allowable produced from other wells on the lease that produce little or no water, the field's water-handling problem would be largely solved.

By eliminating these provisions for the transfer of allowables, these operators feel that the order does not offer all the inducements contained in the original proposed order, especially in so far as the small operator is concerned. These two points were ones that independent operators were most desirous of having written in the order as they would have permitted different approaches to the problems both of curbing water production and of its handling. For that reason there is some dissatisfaction with the order and it is possible a request will be made for another hearing.

(Continued on Page 86)

Aux Vases at Johnsville May Bring Second Campaign

By STAFF CORRESPONDENT

MATTOON, Ill., Nov. 24.—After 2 weeks of inclement weather, Illinois oil operations started back on the upward trend during the past week and oil men throughout the state were confidently predicting that development and exploration would soon reach the high peak maintained throughout the summer.

Perhaps one of the main signs that points toward increased production and activity is the planned Aux Vases exploration in the Johnsonville field which has been just about outlined as far as McClosky production is concerned. Rigs are springing up steadily in the field even now as operators prepare to perforate into Aux Vases shows or drill new wells. A few Aux Vases wells have already been completed in the field and most observers are satisfied that the Aux Vases development will spread just as rapidly as did the McClosky development a few months ago.

Illinois activity in other areas last week was featured by the discovery of one new pool, a second new pool in prospect and the near completion of a closely-watched wildcat test.

Aux Vases Pool Opened in Coles County

The Carter Oil Co. has opened a new pool in Coles County with the near-completion of 1 Haybrook, E½ SE SW 2-13n-7e, about 11 miles north of Mattoon. Following a 10-qt. shot in the Aux Vases at 1,832-40 ft., the well produced 41 bbl. of oil and 1 bbl. of water. Only other oil production in the county at present is from a small McClosky producer south of Mattoon, which was completed more than 2 years ago.

Wildcats Show Promise in Clay and Jasper Counties

McClosky production has been apparently assured in an area about 6 miles east of the Dundas Consolidated pool, where Craft-Powers 1 Wade, W½ SW NW 5-5n-14w, recovered 1,200 ft. of oil during a preliminary drill-stem test. The McClosky was topped at 2,829 ft. in 1 Wade and hole was bottomed at 2,835 ft.

J. W. Sanders 1 Thompson, N½ NW SE 30-3n-6e, east of Xenia in Clay County, was reportedly near completion in the McClosky last week. Operators, however, have not yet released any information concerning the well and reports that saturation was encountered in the Benoist, Aux Vases and McClosky could not be confirmed. No. 1 Thompson is about 14 miles west of nearest production in the Clay City field.

Bright light of Richland County exploration last week was the Nolf et al 1 Sterchi heirs, W½ NW NW 6-4n-14w, which flowed 800 bbl. naturally from the McClosky at a total depth of 3,032 ft. The well is a north offset to a smaller producer which opened the county's Grand Prairie pool recently and is the second producer in the field.

Recompletions Indicate Rapid Decline of McClosky Production

One of the first undeniable indications of the rapid decline of McClosky production was evidenced last week by the large number of recompletions reported for the Noble and Clay City pools. A total of 50 recompletions was reported for the two pools, 37 in the Noble pool and 13 in the Clay City field. All of these wells were old McClosky producers in which production had declined to the point where they were no longer profitable to produce. In every case the wells were plugged back and completed in the Weiler. All of the wells in the Noble field and the majority of those in the Clay City field were less than 5 years old.

Another indication of the short life of the McClosky lime may be found in the Salem pool of Marion County where a majority of the McClosky wells have either been plugged back to the Chester sands or deepened to the St. Louis, Salem or Trenton limes.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Dundas	2	670	5,690
Johnsonville	12	5,944	38,330
Mill Shoals	3	871	9,724
New Harmony	7	665	19,451
Parkersburg	2	3,655	6,339
Roland	5	487	13,918
Rural Hill	4	2,116	12,997
Other pools	16	2,294	38,321
Wildcats	1	170	2,316
Dry holes: Fields	*2	.....	6,129
Wildcats	11	.....	18,826
Total	65	.....	172,041
Recompletions: Noble	37	6,963	.....
Clay City	13	537	.....
Others	4	106	.....

*Dundas 1, Johnsonville 1.

ILLINOIS COMPLETIONS

Wildcats

Bond County: T. A. Booth 1 Mautz, NW NE NW 27-5n-4w, dry at 601 ft., Pottsville 585 ft.

Clay County: Longhorn & Mabee 1 Harmon, W½ NW SW 36-5n-7e, dry at 3,015 ft., Kincaid 1,999 ft., Menard 2,181 ft., Tar Springs 2,279 ft., Glen Dean 2,377 ft., Golconda 2,446 ft., Barlow 2,543 ft., Weiler 2,566 ft., Aux Vases 2,808 ft., Ste. Genevieve 2,880 ft., Renault 2,796 ft., St. Louis 3,011 ft.

Clinton County: J. Darnell 1 F. W. Beckmeyer, SE NW SW 25-3n-3w, dry at 1,080 ft., base Pennsylvanian and Golconda 930 ft., Barlow 1,050 ft., Cypress 1,055 ft., Cypress sand 1,060 ft.

Coles County: Eastern Ill. Oil 1 L. L. Halleck, SE SE SW 20-13n-14w, dry at 722 ft., Mississippian 357 ft., sand 370 ft., slight show oil 370-75 ft., 550-60 ft.

A. M. Meyers 1 Ashmore, E½ SE NW SW 28-13n-14w, dry at 455 ft.

Edwards County: Mabee Drlg. 1 R. W. Smith, NW NW SE 7-3s-10e, dry at 3,097 ft., Menard 2,408 ft., Waltersburg 2,496 ft., Tar Springs 2,558 ft., Glen Dean 2,662 ft., Golconda 2,772 ft., Cypress sand 2,918 ft., Paint Creek sand 2,990 ft., Benoist 3,072 ft.

Hamilton County: Mid-Sun 1 Hoffman, S½ NE NW 22-5s-5e, dry at 3,527 ft., Barlow 2,045 ft., Aux Vases 3,280 ft., Ste. Genevieve 3,316 ft., McClosky 3,422 ft.

Jackson County: E. S. Adkins 1 Parrish, NE NW SW 9-7s-1w, dry at 2,373 ft., base Pennsylvanian 1,202 ft., Degonia 1,298 ft., Clore 1,386 ft., Palestine 1,397 ft., Menard 1,532 ft., Waltersburg 1,602 ft., Tar Springs sand 1,683 ft., Glen Dean 1,761 ft., Hardinsburg 1,806 ft., Hardinsburg sand 1,824 ft., Golconda 1,869 ft., Cypress sand 2,023 ft., Paint Creek 2,090 ft., Benoist 2,173 ft., Renault 2,200 ft., Aux Vases 2,241 ft., Aux Vases sand 2,252 ft., Ste Genevieve 2,295 ft., Rosiclare 2,308 ft., Fredonia 2,368 ft.

Jefferson County: Robinson-Puckett 1 Holshonser, SW SW NW 5-4s-4e, dry at 3,181 ft., Menard 2,275 ft., Vienna 2,410 ft., Tar Springs 2,415 ft., Glen Dean 2,492 ft., Golconda 2,637 ft., Barlow 2,751 ft., Cypress sand 2,780 ft., Benoist 2,946 ft., Aux Vases 3,062 ft., Ste. Genevieve 3,103 ft., Rosiclare 3,120 ft., McClosky 3,163 ft.

Marion County: Doran & Buttram 1 Morgan, SE NW NE 12-4n-2e, dry at 2,237 ft., Menard 1,456 ft., Glen Dean 1,636 ft., Cypress 1,508 ft., Cypress sand 1,811 ft., Benoist 1,983 ft., Aux Vases 2,050 ft., Renault 2,020 ft., Ste. Genevieve 2,122 ft., Rosiclare 2,133 ft., Fredonia 2,145 ft., McClosky 2,187 ft., St. Louis 2,210 ft.

Perry County: Blankenship 1 H. George, NW NE SW 23-4s-1w, dry at 1,614 ft., Glen Dean 872 ft., Cypress 1,096 ft., Cypress sand 1,112 ft., Paint Creek 1,180 ft., Paint Creek stray 1,214 ft., Benoist 1,248 ft., Renault 1,279 ft., Aux Vases 1,289 ft., Ste. Genevieve 1,397 ft., Rosiclare 1,420 ft., Fredonia 1,523 ft., McClosky 1,582 ft.

Pike County: Schachtsick 1 Newton, NW NE NE 4-3s-4w, dry at 451 ft., Mississippian 8 ft., Kinderhook 215 ft., Maquoketa 398 ft.

Randolph County: Biddell 1 Hayer, SE NW SW 4-5s-6w, dry, old well deepened from 350-506 ft.

Wabash County: H. Fotiades 1 L. Mason, SW SE NW 27-1n-12w, pumped 170 bbl., 2,000 gal. acid, McClosky 2,309-13 ft., T.D. 2,316 ft.

Wayne County: Ben Nation 1 M. Fenton, E½ NE SE 24-2s-7e, location abandoned.

Williamson County: R. B. Martin 1 Guaranty Trust, NW SE SW 28-8s-4e, location abandoned.

Fields

Albion, Edwards County: Superior 4 Fewkes, E½ NW SW 7-2s-11e, pumped 231 bbl., perf. 3,088-93 ft., 3,000 gal. acid, McClosky 3,088-95 ft., 3,190-94 ft., T.D. 3,201 ft.

Morrison & Noah 1 L. J. Horton, NE SW SE 13-2s-10e, pumped 42 bbl. in 12 hr., 55-qt. shot 2,952-79 ft. through casing, 130-qt. shot 2,958-77 ft., Benoist 2,960 ft., old well P.B. from 3,200-2,985 ft.

Allendale, Wabash County: A. Muhlbach 1 M. Litherland, E½ SE SW SW 5-1n-12w, pumped 5 bbl. oil and 30 bbl. water, 60-qt. shot 1,532-62 ft., Biehl 1,532-62 ft., T.D. 1,573 ft.

Clay City, Wayne County: Pure 4 Chaffin B, S½ SE NE 19-2n-8e, pumped 14 bbl. oil and 15 bbl. water, Cypress sand 2,645-62 ft., T.D. 2,662 ft.

Pure 4-B Hosselton, S½ SW NE 31-2n-8e, flowed 357 bbl. oil and 75 bbl. water, McClosky 3,017-24 ft., T.D. 3,030 ft.

Dale, Hamilton County: Texas 10 R. R. Johnson, NE NE NE 13-6s-6e, flowed 166 bbl., 10-qt. shot 3,080-86 ft., Aux Vases 3,069 ft., T.D. 3,093 ft., P.B. 3,086 ft.

Dundas, Jasper County: Pure 1 Boos, E½ NE SE 29-6n-10e, dry at 2,879 ft., Barlow 2,450 ft., Aux Vases 2,740 ft., Ste. Genevieve 2,778 ft., Rosiclare 2,800 ft., Fredonia 2,813 ft., McClosky 2,818 ft.

Pure 2 W. S. Rotramel, W½ SE SE 8-5n-10e, flowed 350 bbl., 5,000 gal. acid, McClosky 2,789-97 ft., 2,802-05 ft., 2,807-10 ft., T.D. 2,830 ft.

Pure 2 Rush Parnell, W½ SE NE 18-5n-10e, flowed 320 bbl., 1-in. choke, 5,000 gal. acid, McClosky 2,820-25 ft., 2,828-33 ft., 2,835-41 ft., T.D. 2,860 ft.

East Patoka, Marion County: Highland 2 S. Thalman, NE NW SW 35-4n-1e, pumped 42 bbl., 10-qt. shot 1,366-72 ft., Cypress sand 1,359 ft., T.D. 1,372 ft.

Griffin, Wabash County: Longhorn 21 Helm, SE SW SE 22-3s-14w, pumped 150 bbl., 80-qt. shot 2,757-77 ft., Aux Vases 2,752-77 ft., T.D. 2,777 ft.

W. W. Gray 23-A fee, S½ SE NE SW 14-3s-14w, pumped 117 bbl., natural, Cypress sand 2,503 ft., T.D. 2,534 ft.

Johnsonville, Wayne County: Shell 3-A Cisne State Bank, N½ SE SE 22-1n-6e, pumped 378 bbl., 5,000 gas. acid, McClosky 3,157-78 ft., 3,181-83 ft., T.D. 3,244 ft.

Shell 2 H. Galbraith, N½ SE SW 22-1n-6e, pumped 319 bbl., 5,000 gal. acid, McClosky 3,143-62 ft., T.D. 3,221 ft.

Texas 1 J. G. Turner, S½ NE SW 28-1n-6e, dry at 3,250 ft., Glen Dean 2,578 ft., Golconda 2,675 ft., Cypress 2,783 ft., Aux Vases 3,000 ft., Ste. Genevieve 3,080 ft., Rosiclare 3,110 ft., Fredonia 3,150 ft.

Wiser 3 H. States, E½ SE SW 36-1n-6e, pumped 186 bbl., 25-qt. shot 3,065-85 ft., Aux Vases 3,059-70 ft., T.D. 3,276 ft., P.B. 3,085 ft.

Shell 1 A. E. Porter, E½ NW SE 36-1n-6e, pumped 193 bbl. from Aux Vases and McClosky, perf. 3,194-3,202 ft., 3,210-23 ft., 3,000 gal. acid, 15-qt. shot 3,081-90 ft., Aux Vases 3,671-93 ft., McClosky 3,196-3,220 ft., T.D. 3,277 ft.

United Prod. 5 Cariens, S½ NW SW 35-1n-6e, pumped 500 bbl. from Aux Vases, 30-qt. shot 2,999-3,013 ft., T.D. 3,230 ft., P.B. 3,020 ft.

Ruwaldt 6 J. Cariens, SW SE NW 35-1n-6e, pumped 300 bbl., 20-qt. shot 3,003-18 ft., Aux Vases 3,002-18 ft., T.D. 3,018 ft.

Wiser 5-B Dickey, S½ SE SE 34-1n-6e, flowed 526 bbl., 5,000 gal. acid, McClosky 3,156-68 ft., 3,189-93 ft., T.D. 3,216 ft.

Pearl Morris 1 Rogers-Le Croy, N½ NE SW 26-1n-6e, pumped and flowed 150 bbl., 3,000 gal. acid, reacidized 1,500 gal., McClosky 3,148-63 ft., T.D. 3,197 ft., P.B. 3,172 ft.

Jablonski 3 Bratton, N½ SE SE 26-1n-6e, flowed 1,185 bbl., 4,000 gal. acid, McClosky 3,154-62 ft., T.D. 3,133 ft.

United Prod. 2-A L. Hale, N½ NW SW 22-1n-6e flowed 1,000 bbl., 2,500 gal. acid, perf. 3,193-95 ft., 3,198-3,210 ft., 3,218-22 ft., McClosky 3,192-94 ft., 3,199-3,206 ft., 3,208-10 ft., 3,217-20 ft., T.D. 3,250 ft.

Carter 1 Lowe, S½ NW NW NW 3-1s-6e, pumped 215 bbl., 500 gal. acid, reacidized 5,000 gal., McClosky 3,144-52 ft., 3,178-84 ft., T.D. 3,223 ft.

Carter 2 Lowe, SW NE NE NE 4-1s-6e, flowed 992 bbl., 500 gal. acid, reacidized 5,000 gal., McClosky 3,155-61 ft., 3,163-67 ft., T.D. 3,225 ft.

Louden, Fayette County: Carter 3-D C. Blankenship, NW SE 28-8n-3e, flowed 250 bbl. through ¾-in. choke, natural, Devonian 2,994 ft., pay 3,072 ft., T.D. 3,075 ft.

Carter 4-D Weaber, SE NW 21-8n-3e, flowed 212 bbl. oil and 20 bbl. water, 100 gal. acid, Devonian 3,045 ft., pay 3,125 ft., T.D. 3,132 ft.

Mill Shoals, Hamilton County: Texas 1-B Poorman, NE NE SE 24-3s-7e, swabbed 74 bbl. oil and 13 bbl. water, 15-qt. shot 3,248-58 ft., Aux Vases 3,233-46 ft., T.D. 3,258 ft.

Mill Shoals, White County: Texas 14 Poorman, SE SE NW 30-3s-8e, pumped 330 bbl., 20-qt. shot 3,210-24 ft., Aux Vases 3,199 ft., T.D. 3,228 ft.

Texas 15 Poorman, NE SE NW 30-3s-8e, pumped 467 bbl., 25-qt. shot 3,210-27 ft., Aux Vases sand 3,194-3,238 ft., T.D. 3,238 ft.

New Harmony, White County: Mabee 8 Smith, SE NW SW SE 4-4s-14w, pumped 25 bbl., perf. 2,718-27 ft., Benoist sand 2,689-2,740 ft., T.D. 2,832 ft.

Mabee Drlg. 1 F. M. Hon, NW NW NE 9-4s-14w, pumped 105 bbl. oil and 10 bbl. water, 60-qt. shot 2,719-43 ft., Benoist sand 2,704 ft., T.D. 2,747 ft.

Superior 32 E. M. Fitten, SW SE NW 23-4s-14w, pumped 130 bbl., 140-qt. shot 2,848-79 ft., perf. 2,596-2,600 ft., 2,648-58 ft., Aux Vases 2,847-76 ft., Cypress sand 2,592-2,630 ft., 2,645-70 ft., T.D. 2,879 ft.

Superior 2-A Greathouse, SE SW NE SW 34-4s-14w, pumped 135 bbl., McClosky 2,823-91 ft., T.D. 2,901 ft.

Superior 11 H. C. Ford et al, NE SE SW 4-5s-14w, flowed 165 bbl., McClosky 2,918-23 ft., 2,938-41 ft., T.D. 2,947 ft.

Superior 17 H. C. Ford et al, NW NW SW 4-5s-14w, pumped 40 bbl., 10-qt. shot 2,854-76 ft., perf. 2,182-2,206 ft., Aux Vases 2,853-83 ft., Waltersburg sand 2,106 ft., T.D. 2,941 ft.

Tide Water 4 Bacon, SE SE NE 5-5s-14w, pumped

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45 bbl., 40-qt. shot 2,190-2,202 ft., Waltersburg sand 2,182-2,204 ft., T.D. 2,204 ft.

New Haven, White County: Hiawatha 9 Stinson, SW NE NE 19-7s-11e, pumped 40 bbl., 25-qt. shot 2,443-55 ft.,, perf. 2,095-2,105 ft., 40-qt. shot 2,443-55 ft., Tar Springs 2,080 ft., Cypress sand 2,443 ft., T.D 2,458 ft.

North Noble, Richland County: Pure 3 D. B. Veit, NE SW SW 23-4n-9e, pumped 69 bbl. oil and 3 bbl water, natural, Cypress sand 2,587-2,619 ft., T.D 2,619 ft.

Parkersburg, Edwards County: Central Pipe Line 4 Kent Stremme, W½ NE SE 31-2n-14w, location abandoned.

Central Pipe Line 3 Kent Comm., E½ NE SE 31-2n-14w, location abandoned.

Central Pipe Line 2 Kent Comm., W½ SE NE 31-2n-14w, location abandoned.

Ohio 1 H. G. Markham, NW SW NW 32-2n-14w flowed 677 bbl., perf. 3,114-27 ft., 7,000 gal. acid McClosky 3,114-34 ft., 3,138-48 ft., T.D. 3,174 ft.

Ohio 1 Otto Stremme, E½ NE NE 31-2n-14w, flowed 2,978 bbl., 7,000 gal. acid, perf. 3,124-39 ft., Mc Closky 3,124-34 ft., T.D. 3,165 ft.

Rising Sun, White County: Cherry & Kidd et al 9 F Karch, SW SE NW 24-6s-10e, location abandoned

Cherry & Kidd et al 9 H. Karch, SW NW SE 13-6s-10e, location abandoned.

Roland, White County: Cities Service 4 Mount, E½ E½ NE 11-7s-8e, flowed 34 bbl., 40-qt. shot on bottom, Waltersburg 2,152-70 ft., T.D. 2,171 ft.

Fisher Oil 1 L. E. Welch, SW SW SW 11-7s-8e. pumped 60 bbl., 40-qt. shot 2,887-2,931 ft., Aux Vases 2,857-90 ft., T.D. 2,931 ft.

Kingwood-Sinclair 3 Martin, NE NW NW 13-7s-8e, pumped 158 bbl. oil and 3 bbl. water, Cypress sand 2,546-76 ft., Benoist 2,720-32 ft., Aux Vases 2,870-92 ft., T.D. 2,895 ft.

Carter 1 L. McGill, NE NE NE 15-7s-8e, pumped 8 bbl. from Waltersburg and Aux Vases, perf. 3,172-75 ft., 80-qt. shot 2,924-52 ft., perf. 2,161-75 ft., Waltersburg 2,165-87 ft., Aux Vases 2,932-38 ft., 2,940-44 ft., T.D. 2,961 ft.

Carter 2 L. McGill, SE NE NE 15-7s-8e, pumped 150 bbl. from Waltersburg and Aux Vases, perf. 2,156-61 ft., 2,169-72 ft., Waltersburg sand 2,155-76 ft., Aux Vases 2,914-44 ft., T.D. 2,960 ft.

Rural Hill, Hamilton County: Shell 3 Ventrees, SE SE SW 12-6s-5e, flowed 760 bbl. in 18 hr., perf. 3,220-38 ft., 2,500 gal. acid, perf. 3,124-33 ft., 2,500 gal. acid, 15-qt. shot 3,170-80 ft., Aux Vases 3,144 ft., McClosky 3,213-24 ft., Levias pay 3,160-80 ft.

Kewanee 3 Flannigan, NE SW NE 14-6s-5e, flowed 411 bbl., perf. 3,230-46 ft., 2,500 gal. acid, T.D 3,325 ft.

Kewanee 4 Flannigan, SE SW NE 14-6s-5e, flowed 297 bbl., McClosky 3,222-39 ft., 3,301-11 ft., T.D 3,314 ft.

Cameron Oil 1-A Lockwood, NW NW NE 23-6s-5e. flowed 648 bbl., 80-qt. shot 3,190-3,218 ft., Aux Vases 3,078 ft., T.D. 3,218 ft.

Cameron 6 Lockwood, SW NE NW 23-6s-5e, location abandoned.

South Lawrence, Lawrence County: Chet. Evarts 1-A Spiedel, NW NE NW 26-2n-12w, pumped 86 bbl., Biehl 1,370-90 ft., T.D. 1,405 ft.

West Centralia, Clinton County: Sistler & Strawser 2 Phoenix, SE NW SW 14-1n-1w, pumped 180 bbl oil and 80 bbl. water, 7-qt. shot 1,438-44 ft., Benoist 1,437 ft., T.D. 1,447 ft.

Woodlawn, Jefferson County: Cameron 1 Schultz, NE SW NW 35-2s-1e, pumped 181 bbl., 25-qt. shot 1,970-78 ft., Benoist 1,964 ft., T.D. 1,978 ft.

N. V. Duncan 1 Hall, SE SE SE 36-2s-1e, location abandoned.

Magnolia 4 Kaminski, SW NE SE 2-3s-1e, pumped 194 bbl., 20-qt. shot 1,957-65 ft., Benoist 1,941 ft., T.D. 1,965 ft.

Louisiana Gulf Coast Fields

(Continued from Page 80)

previous week as an excellent producer in a new sand at 10,310-42 ft. Humble 1 Dave Luke, several hundred feet northeast of the Atlantic well, flowed 302 bbl. from the same sand at 10,295-10,301 ft., and the company is rigging up for another well. South of the field, Superior Oil Co. of California is reported to have assembled a block of several thousand acres following extensive geophysical work.

LOUISIANA GULF COAST COMPLETIONS

Fields

Anse La Butte, St. Martin Parish: Debuse Oil Co. 2 De Borrah Oil Co., dry, T.D. 1,452 ft.

Bayou Sale, St. Mary Parish: Atlantic 1 St. Mary Parish, 444 bbl., ¼-in. choke, perf. casing 10,310-42 ft., T.D. 11,879 ft.

Humble 1 Dave Luke, 302 bbl., 9/64-in. choke, perf. casing 10,293-10,301 ft., T.D. 10,768 ft.

Belle Isle, St. Mary Parish: Sun 3 State, top salt 598 ft., dry, T.D. 600 ft., salt.

Black Bayou, Cameron Parish: Shell 48 Watkins, dry, T.D. 8,480 ft.

Cameron Meadows, Cameron Parish: Magnolia 34 Cameron Meadows, 58 bbl. oil plus 8 per cent salt water, pumping, T.D. 1,347 ft.

Chalkley, Cameron Parish: Shell 2 Lacassane, 68 bbl. oil and 362 bbl. salt water, ¼-in. choke, perf. casing 10,117-19 ft., T.D. 10,122 ft.

Charenton, St. Mary Parish: Fifteen Oil Co. 1 South Coast Corp., dry, T.D. 9,500 ft.

Pan American 1 Charenton, 105 bbl. fluid, 7 per cent salt water, pumping, T.D. 1,240 ft.

East Hackberry, Cameron Parish: Harrison & Abercrombie 2 Doiron, 539 bbl., 10/64-in. choke, T.D. 7,365 ft.

Jennings, Acadia Parish: Shell 18 Community, 146 bbl. oil and 146 bbl. salt water, ¼-in. choke, perf. casing 7,659-97 ft., T.D. 7,759 ft.

New Iberia, Iberia Parish: William Helis 15 Bolivar, 154 bbl., 12/64-in. choke, perf. casing 4,766-72 ft., T.D. 4,950 ft.

Port Allen, West Baton Rouge Parish: Amerada 4 Wilberts Sons Lumber Co., 65 bbl. oil plus 2 per cent salt water, ¼-in. choke, perf. casing 9,514-18 ft., T.D. 9,795 ft.

Quarantine Bay, Plaquemines Parish: Gulf 30 State, 564 bbl., ⅞-in. choke, perf. casing 8,202-10 ft., T.D. 8,567 ft.

Starks, Calcasieu Parish: W. T. Burton 4 Industrial Lumber Co., dry, T.D. 7,439 ft.

St. Gabriel, Iberville Parish: George Echols 4-A Natalbany Lumber Co., 303 bbl., 9/64-in. choke, perf. casing 8,645-62 ft., T.D. 8,668 ft.

Shell 3 Natalbany Lumber Co., 281 bbl., 9/64-in. choke, perf. casing 8,612-48 ft., T.D. 9,155 ft.

Sweet Lake, Cameron Parish: Pure 25 Stanolind Oil & Gas Co., 175 bbl., ⅛-in. choke, perf. casing 8,606-18 ft., T.D. 7,630 ft.

Ville Platte, Evangeline Parish: Continental 1 Adam Tate, 191 bbl., 12/64-in. choke, perf. casing 9,932-62 ft., T.D. 9,972 ft.

Continental 1 Ed Tate, Unit 27, dry, T.D. 10,129 ft.

Continental 1 Tate-Becker, Unit 33, dry, T.D. 10,290 ft.

Continental 1 J. G. Vidrine, 256 bbl., 12/64-in. choke, perf. casing 10,168-78 ft., T.D. 10,248 ft.

R. A. Irwin 3 Johnson, 264 bbl., ¼-in. choke, perf. casing 10,128-83 ft., T.D. 10,192 ft.

West Bay, Plaquemines Parish: Gulf 4-B Timolat, 235 bbl., 5/32-in. choke, T.D. 7,400 ft., P.B. T.D. 7,342 ft.

West Lake Verret, St. Martin Parish: Shell 8-A Norman-Breaux, 146 bbl. oil plus 2 per cent salt water, 14/64-in. choke, T.D. 2,370 ft.

Shell 3 St. Martin Land Co., 81 bbl. oil and 10 bbl. salt water, gas lift, sand 2,359-73 ft., T.D. 3,490 ft.

Shell 7-A Norman-Breaux, 17 bbl., 1-in. choke, T.D. 2,674 ft.

White Castle, Iberville Parish: Shell 19 Wilbert, 327 bbl. fluid, 50 per cent salt water, gas lift, perf. casing 6,765-6,570 ft.

LOUISIANA GULF COAST DRILLING REPORT

Acadia Parish: Stanolind 1 Tweedel, 17-7s-3e, T.D. 10,000 ft., S.D.

Allen Parish: J. A. Hafner, Jr., 1 Nevils, 10-7s-6w, S.D. 4,560 ft.

Calcasieu Parish: Union Oil Co. of California 1 Gray, 4-11s-9w, drilling shale 8,258 ft.

Iberia Parish: Gulf 2 Petit Anse Co., 25-13s-5e, drill stem stuck, T.D. 11,237 ft.

Jefferson Davis Parish: Cities Service 1 Lacassine, 36-11s-5w, drilling sand and shale 7,628 ft.

Jefferson Parish: Reese E. Carter 2 Cravens, Westwego field, drilling sandy shale 8,290 ft.

La Fourche Parish: Ernest Cockrel 1 La Fourche Land Co., 32-18s-22e, S.D. 1,103 ft.

Orleans Parish: W. T. Burton 7 State, 18-11s-15e, drilling shale 10,125 ft.

St. Mary Parish: Texas 1 State Cote Blanche, Twp. 15s-7e, drilling shale and lime 9,181 ft.

St. Martin Parish: Amerada 1 St. Martin Land Co., 19-9s-8e, drilling shale 10,000 ft.

Terrebonne Parish: Gulf 1 Eschete, 67-20s-18e, drilling shale and shells 6,376 ft.

Objection Raised to Salt-Water-Disposal Order

(Continued from Page 84)

Another change from the order as proposed by the operators is in the definition of salt water. The order as issued defines it as water from the Woodbine having a chloride concentration of more than 35,000 p.p.m. The original proposal set the concentration at 20,000 parts.

Specifically, the order provides that an extra allowable of 1 bbl. of oil per well be granted for each 50 bbl. of water injected. The additional allowable, allocated to the lease producing the water, is to be distributed by the commission to the wells on the same lease, but not more than 6 bbl. a day to go to any one well. An 8-bbl. top allowable is assigned on the water produced from any one well. Thus on a lease producing 500 bbl. of brine, all of which is returned to the Woodbine, the operator would be granted an additional allowable of 10 bbl. if the water is produced by several wells. If that amount is produced by one well, an added allowable of only 8 bbl. would be granted. The operator could produce this oil from any other wells on the same lease, no one well producing more than 6 bbl.

The order further provided: (1) That monthly statements on the leases connected with the water-disposal system and the total volume of water injection be sent to the commission. (2) The metering of salt water into the injection wells. (3) That well status reports be submitted every 3 months showing results of tests made in the last 30 days of the period. (4) Operators who converted oil producers under Commission Order 120, No. 6-1456, March 29, 1940, into injection wells will be permitted the allowable for the converted oil producers and in addition shall receive the oil credits allowed under the new order. (5) Hearings are required for completion and operation of salt-water injection systems.

Dry Hole Cuts Off Maurbro From North La Ward Field

By NEIL WILLIAMS

HOUSTON, Tex., Nov. 24.—Cockfield sand production was opened in the Goodrich area, Polk County, as Pan American 1 Texas Long Leaf Lumber Co., A. Viesca Survey, flowed 147 bbl. of fluid per day, of which approximately 7 per cent was salt water. The balance was 31.9-gravity oil. The well was tested for 17 hour through a 16/64-in. choke and for 7 hours on a 20/64-in. choke. Tubing pressure ranged from 100 lb. to 300 lb. Total depth of the well is 4,035 ft., and production is from a sand-and-shale section logged from 4,030-50 ft.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Fields	11	2,304	67,794
Gas wells: Fields	1	.....	3,746
Dry holes: Fields	1	.....	7,788
Total	13	.....	79,328

Goodrich has been looked upon as a favorable prospect for several years and a number of wildcats have been drilled in the general area. It is located northwest of the Livingston field. While the discovery well appears to be a small producer, the well may be located on the edge of the structure and for this reason the progress of the company's 2-B Texas Long Leaf Lumber Co., which is being started 933 ft. northwest will be watched with wide interest. The discovery well was started as a Wilcox test and reached a depth of approximately 9,900 ft., where drilling was halted due to mechanical trouble. The hole was then plugged back, sidetracked and redrilled to the present depth.

Third Wilcox Discovery for Montgomery County Is Testing

The outcome of a production test being made at Atlantic Refining Co. 1 Foster Lumber Co., located in the Fostoria area, Montgomery County, was holding considerable attention. With the hole bottomed in the Wilcox at 11,794 ft., 4½-in. liner cemented at 10,609 ft. was perforated at 10,508-20 ft., and at the close of the week the hole was being swabbed at 1,500 ft. The completion of the well as a producer would open the third Wilcox sand field for the county this year. The other fields are Magnolia and Lake Creek.

As a result of these discoveries the county has been placed in favorable light, and it is due to become one of the most active areas along the trend. Drilling operations were recently increased in the Lake Creek field by Superior Oil Co. of California and Stanolind Oil & Gas Co., while in the Magnolia field new locations for two outpost wells have been staked by Glenn McCarthy, making a total of four wells to be drilled in the near future.

New Wilcox Trend Test Started Near Hallettsville

The trend gained a new wildcat operation as John Mayo and Stewart Boyle moved in for an 8,500-ft. test about 12 miles southeast of Hallettsville, La Vaca County. The well is located on a block of approximately 8,500 acres, which was assembled by R. H. Goodrich and W. H. Cooke, centering around the Moses Wooten Survey. The block is about 12 miles northwest of the Vienna (Provident City) field. Leasing and royalty buying in this county has been extremely active over a period of several months, and additional activity is anticipated.

The most active major company in the area has been Shell Oil Co., Inc. The company is testing a 1-mile-southeast outpost to the Vienna field, while gas-distillate production was reported to have been opened in the Brushy Creek area, but details of the completion are not available.

North La Ward Defined Southwest And Cut Off From Maurbro

The new North La Ward field, Jackson County, which is becoming the district's most active field, received its first abandonment as Edwin M. Jones abandoned 1 Olsovsky at a total depth of 5,350 ft. The well ran approximately normal with wells in the Maurbro field, but only slight showings were logged in the main Marginulina sand at 5,211-53 ft. The well is located 4,250 ft. northeast of the discovery well, and its abandonment discourages hopes that the field may be linked with that of the Maurbro field.

As the well was being abandoned Gulfboard and Salt Dome Oil Corp. 1 Dickey, 4,500 ft. southwest of production, is believed to have defined the limits of the field in this direction. The well tested dry gas when tested through perforated casing at 5,216-20 ft. These perforations had been squeezed off with cement at the close of the week, and while there is a chance that it may be complete as an oiler, production is expected to be small and very little additional development is expected in this direction.

While production was believed to be confined in the above directions, additional acreage was being opened on the extreme southeast side of the field as Moore & Ahern 1 Bodet, 5,000 ft. southwest of production, was flowing at the rate of 2 bbl. of oil per hour through a ⅛-in. choke, while testing through perforated casing at 5,216-19 ft. While the well is being completed for a producer, it is believed to be near the edge of the structure in view of the fact that drill-stem test earlier in the week at 5,217-26 ft., and at 5,227-36 ft. recovered salt water with a trace of oil.

Although the field is in the early stages of development, it appears that the producing section becomes more broken as development spreads to the southwest and southeast and possibilities of production being joined with that of the Lolita field, 2 miles to the south, do not appear encouraging. Approximately 4,000 ft. northeast of the Gulfboard test, and about 1,000 ft. south of Christie and Dunnam 1 Pickering,

(Continued on Page 99)

More than 2,000,000 feet of casing set in 180 wells in one Louisiana Field

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CANADIAN FIELDS

Rising Alberta Production Increased by Tar Sands

By VICTOR LAURISTON

CHATHAM, Ontario, Nov. 22.—Crude and natural-gasoline production from all Alberta fields for the week ending November 10 averaged 26,947 bbl. daily, against 26,570 bbl. daily for the previous week and 28,053 bbl. daily for the corresponding week last year. The daily average included 25,858 bbl. of crude and 783 bbl. natural gasoline from Turner Valley and 306 bbl. crude from outside fields. There were 190 producing wells, with 30 drilling, 7 testing, 1 abandoned, 2 spudded and 6 new drilling permits.

For September, Alberta crude production totaled 832,273 bbl. or 27,743 bbl. daily, compared with 26,866 bbl. daily in August and 26,520 bbl. daily in September 1940. The September crude production included: Turner Valley, shallow crude, 573 bbl.; limestone naphtha, 1,495 bbl.; limestone crude, 821,036 bbl.; Red Coulee light crude, 981 bbl.; Wainwright heavy crude, 1,273 bbl.; Del Bonita light crude, 885 bbl.; Steveville light crude, 2,912 bbl.; Taber medium crude, 630 bbl.; and Vermilion heavy crude, 2,488 bbl.

In addition, four absorption plants in Turner Valley processed 2,732,504,000 cu. ft. of gas to obtain 23,505 bbl. of natural gasoline, an increase of 115 bbl. daily over August and 137 bbl. daily over September 1940.

The crude production was also supplemented by bituminous sand operations at McMurray, where, in September, 4,027 tons of sand were mined, producing 3,440 bbl. of crude oil, 192 bbl. of gasoline and 1,162 bbl. of diesel and burner oil. From May 19, when these operations started, to September 30, the Abasand Oils plant mined 18,852 tons of sand, producing 16,928 bbl. crude oil, 1,069 bbl. gasoline and 3,479 bbl. of diesel and burner oil.

Alberta natural-gas production in September totaled 4,742,998,000 cu. ft., a daily average of 158,200,000 cu. ft. This compared with daily averages of 143,285,000 cu. ft. in August and 149,659,000 cu. ft. in September 1940. The September 1941 output included 1,082,961,000 cu. ft. from gas wells and 3,092,734,000 cu. ft. from oil wells in Turner Valley; 284,854,000 cu. ft. from the Viking-Kinsella field; 220,215,000 cu. ft. from the Medicine Hat field; and 62,234,000 cu. ft. from other fields. Waste gas in September, chiefly from Turner Valley, averaged 93,570,000 cu. ft. daily, compared with 94,723,000 cu. ft. daily in August and 98,347,000 cu. ft. daily in September 1940.

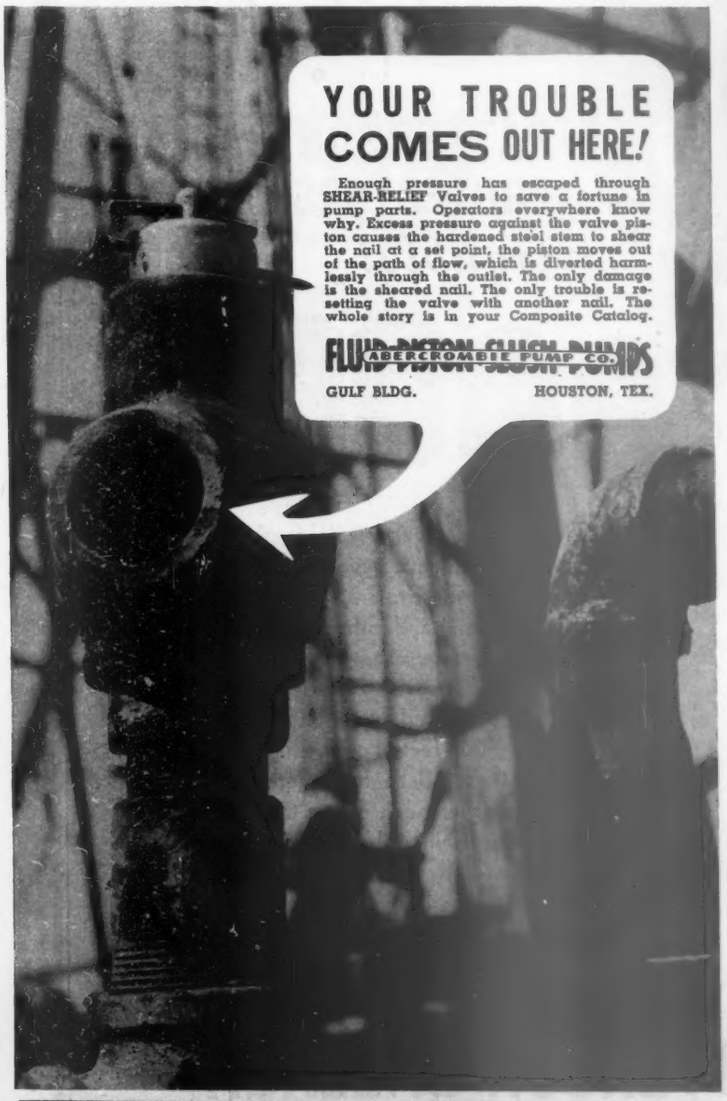
Crude-petroleum stocks in Alberta as of October 1, 1941, amounted to 398,883 bbl., an increase of 12,729 bbl. from August 1 and 113,488 bbl. over October 1, 1940. Refined petroleum stocks as of September 1 were 904,036 bbl., a decrease of 37,036 bbl. from August 1, and 208,955 bbl. from September 1, 1940.

Gas-Oil Ratios Improved

In September, limestone crude wells in Turner Valley had an average gas-oil ratio of 3,770 cu. ft. per bbl., compared with 3,900 cu. ft. in August and 3,970 cu. ft. in September 1941. The improved average is due largely to completion of several large new producers with low ratios. In September, 99 crude wells with individual gas-oil ratios under 5,000 cu. ft. produced 80.2 per cent of Turner Valley crude, using 43.5 per cent of the gas with an average ratio of 2,040 cu. ft. Some 30 wells with ratios between 5,000 and 10,000 cu. ft. produced 12.5 per cent of the crude from 23.2 per cent of the gas with average ratio of 6,970 cu. ft. The remaining 35 wells, with ratios exceeding 10,000 cu. ft., produced 7.3 per cent of the crude from 33.3 per cent of the gas with average ratio 17,300 cu. ft.

The largest crude producer in September was Miracle Royalties 1, with 26,549 bbl. Other large wells included Home Oil 7, with 23,723 bbl.; Home Oil 2, with 22,311 bbl., and Ace Royalties 1, with 21,169 bbl. All were in North Turner Valley.

(Continued on Page 101)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SOUTHWEST TEXAS

Agua Dulce Flank Production Extended Farther Southwest

By F. L. SINGLETON

CORPUS CHRISTI, Tex., Nov. 24.—An important extension to the new producing area recently opened on the southwest side of the Agua Dulce field, Nueces County, was provided as Chicago Corp. 19 Wardner flowed at the rate of 229 bbl. of oil daily through a ⅛-in. choke. Total depth of the hole is 7,197 ft., and production is from sand at 6,423-33 ft. The well is northeast of gas-distillate production at the Stratton field, which adjoins the Agua Dulce field to the south and its completion extends production nearer to the county. Two miles south of Hebbronville, on the T. E. East lease, Henshaw Brothers are moving in material for a 4,300-ft. test. The location is on an 800-acre tract which was farmed out by the Sun Oil Co. Two miles south of the Colorado field, Achning & Daubert are preparing to spud 1 Lopez in Survey 106, a projected Pettus sand test which is expected to be logged from 2,800-3,000 ft.

SUMMARY OF COMPLETIONS

Lower Gulf Coast District

	No.	Bbl.	Footage
Oil wells: Fields	10	1,550	58,180
Dry holes: Fields	4	.....	21,928
Wildcats	2	.....	11,325
Total	16	.....	91,433

Laredo District

	No.	Bbl.	Footage
Oil wells: Fields	6	1,373	22,070
Gas wells: Fields	1	.....	2,930
Dry holes: Fields	1	.....	2,377
Wildcats	3	.....	6,943
Total	11	.....	34,320

South Central Texas District

	No.	Bbl.	Footage
Oil wells: Fields	4	52	3,672
Dry holes: Wildcats	2	.....	2,778
Total	6	.....	6,450

Jim Wells County line. As the well was being completed drilling was started on the same company's 24 Wardner, 2,500 ft. southeast. This area was opened by the S. E. W. Oil Corp., and the latest completion is believed to be from a new sand which corresponds with one of the sands on the east flank.

Along the same trend, but located in the Banquette area, Osborn and Mid-Continent Petroleum Corp. 1 Emma Grove is shut in after showing for a gas-distillate producer when tested through perforated casing at 6,978-83 ft. This area is located about 1½ miles northeast of the field proper, and the well is located about 3,100 ft. south of the 1 Emma Grove which opened the area the latter part of 1940. In view of development around this structure, prospects of opening crude production from downdip sands in the area are encouraging, and additional development in the area is expected to be started in the near future.

San Patricio Well Tests Water

In San Patricio County, and northwest of Mathis, Argo Oil Corp. 1 Wright, Jean Delgado Survey, was being watched with much interest as it drilled ahead in salt-water sand below 4,452 ft. Sand with an oil odor was cored at 4,290-95 ft., at 4,309-13 ft., and from 4,316-17 ft. A 20-minute drill-stem test at 4,312-17 ft. tested 7½ lb. working pressure and 2,070 ft. of salt water.

Jim Wells Test Staked

Location for an interesting wildcat was announced for Jim Wells County as H. R. Smith moved in material for 1 S. E. Wilson, 2 miles northeast of the Henshaw field in the Casa Blanca grant. The well is located on a farmout lease from Tide Water Associated Oil Co., and is scheduled to be drilled to a depth of 5,500 ft.

Gas Field Opened in Jim Hogg

A new gas field was indicated for Jim Hogg County as Sun 1 A. C. Jones, Agua Nueva de Abajo grant, cored sand with an oil odor at 4,211-18 ft. and sand with a slight oil odor at 4,218-68 ft. A 9-minute drill-stem test at 4,211-18 ft. tested 490 lb. working pressure and recovered 6 gal. of drilling mud cut with gas. Another 15-minute test at 4,245-68 ft. tested a slight blow, and 70 ft. of drilling mud was recovered. At the close of the week the well was drilling ahead in water sand below 4,401 ft.

Locations for two more wildcats were announced for

Third Well Showing at Yturria

In the new Yturria field, Starr County, Sun Oil Co. was preparing to test 1-A Chapotal Land Co. after cementing 5½-in. casing at 4,299 ft. Total depth of the hole is 4,620 ft. Location is about 1,100 ft. north of 5-A Chapotal Land Co. and the third producer for the structure is apparently assured as drill-stem testing in the discovery pay at 4,248-51 ft. recovered 1,000 ft. of pipe-line oil.

Prospects of extending the Sun field, Starr County, about 1½ miles north appear more encouraging as Sun 1-C Montalvo recovered 285 ft. of oil on a 20-minute drill-stem test at 4,908-14 ft. Drill-stem testing at intervals from 4,300-4,500 ft. tested gas and distillate.

New Field Showing Near Mirando City

In Webb County Forest Development Co. is believed to be opening a new Mirando sand discovery as 1 A. D. Hoogterp, 2 miles northwest of Mirando City, Survey

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1110, Block 11, was bailing from 1 to 2 bbl. of oil per day. The well was drilled to a total depth of 1,910 ft., and the hole was plugged back to 1,518 ft. and the test was made with 5½-in. casing cemented at 1,495 ft. The sand was acidized with 250 gal. of acid under 340 lb. working pressure.

Two Operations on Balcones Fault Line Get Shows

Main interest in the Balcones fault-line district was centered on two wildcats in Dimmit and Maverick counties, both of which are being drilled by the Wellington Oil Co. In Dimmit County 1-B D. J. Sullivan, E. H. Carle Survey, is drilling in shale below 2,981 ft., and casing is to be cemented at 3,000 ft. preparatory to making a series of tests in upper sands where some interesting showings were logged.

On the Chittim structure 2 Indio Cattle Co. topped the Edwards lime at 5,769 ft. and fair porosity was logged at 5,871-76 ft., and a slight odor and oil stain was noticed in cuttings at 5,871-76 ft. At the end of the week, another 10-ft. core was being cut and a drill-stem test was scheduled to be made.

Washburn Extender Cutting Salt Water

Quintana Petroleum Co. 1-B Washburn, completed 2 weeks ago in the Wilcox sand to open an important southwest extension to the Washburn field, La Salle County, is reported to be making approximately 6 per cent salt water, along with 90 bbl. of oil daily while testing through a small-size choke. This well is credited with having logged solid sand from 5,513-89 ft., and the perforations at 5,530-50 ft. may have been too deep in the section. The well will be tested for several days and if the salt-water content should show increase, the well may be killed and recompleted.

SOUTHWEST TEXAS DRILLING REPORT

Duval County: Humble 3-E J. F. Welder, E. N. Gray Sur., coring shale 3,450 ft.

Hidalgo County: W. R. Davis 1 Jackson, Jose Felix Hinojosa grant, T.D. 5,050 ft., fishing.

La Gloria Corp. 1 Adams, La Blanca grant, drilling sandy shale 7,785 ft.

Nueces County: Premont Petroleum Co. 1 Noakes, 1 mile north of Calallen, G. Farias grant, dry, T.D. 6,514 ft.

Guy I. Warren 1 S. C. Cooper, Palo Alto grant, dry, T.D. 7,016 ft.

Starr County: Magnolia 2 Hinojosa, Porcion 110, drilling sandy shale 996 ft.

Webb County: Magnolia 2 Santo Tomas, Santo Tomas grant, S.D. 4,203 ft.

Willacy County: Clark & Cowden 2 Yturria Cattle Co., La Sale Vieja grant, Share 59, drilling shale 8,170 ft.

Zapata County: Ralph E. Fair, 1 mile east of Zapata City, J. Cuellar Sur., drilling shale 2,267 ft.

SOUTHWEST TEXAS COMPLETIONS
LOWER GULF COAST DISTRICT

Wildcats

San Patricio County: L. A. Douglas 1 Odem, dry, T.D. 6,941 ft.

Hall Lindsey 1 W. F. Timon, dry, T.D. 4,384 ft.

Fields

Agua Dulce, Nueces County: Hewitt & Dougherty 1 Ariedge, 240 bbl., ⅛-in. choke, perf. casing 7,059-65 ft., T.D. 7,068 ft.

Richardson Petroleum Co. 2 Knight, 205 bbl., ⅛-in. choke, perf. casing 7,040-50 ft., T.D. 7,059 ft.

Cologne, Victoria County: Cox & Hammon 1 Martin, dry, T.D. 5,132 ft.

Fagan, Refugio County: P. R. Rutherford 3-B Fagan, 73 bbl., 3/32-in. choke, perf. casing 5,630-36 ft., T.D. 5,650 ft.

Hord's Creek, Goliad County: Brown & Wheeler 2-C Kauffman, blew out, junked and abandoned, T.D. 2,903 ft.

Luby, Nueces County: Stanolind 19 McCann, 152 bbl., ⅛-in. choke, perf. casing 5,175-78 ft., T.D. 5,179 ft.

(Continued on Page 94)

Oklahoma Fields

(Continued from Page 77)

Anderson-Prichard 1 Wood, NE NE SW 18-15-7, drilling 1,000 ft.

Shell 1 Bishop, NE NE SW 12-15-8, drilling 3,238 ft.

Hughes County: W. K. Jones et al 1 Bryant, SE SW SW 29-5-9, base Calvin 655 ft., drilling 1,835 ft.

H. G. Marshall et al 1 Hundley, W½ SW SE 27-5-10, repairing pumps, T.D. 5,062 ft.

Keener Oil & Gas 1-A Norton, NE NE NW 6-9-10, Cromwell 3,290 ft., Mayes 3,700 ft., Woodford 3,784 ft., drilling 3,801 ft.

Barnsdall 1 Skinner, SE SW NW 11-9-10, drilling 654 ft.

Lincoln County: Skelly 1 Stewart, NE SW NE 2-13-2, drilling 2,850 ft.

Big Chief 1 Barrett, S½ SW NE 20-13-6, gaged 13,000 cu. ft. gas with 1,625 lb. R.P., from Hunton 4,183-4,210 ft.

Leader Oil 1 Morrow, SE NW NW 5-15-6, old well, Sylvan 4,021 ft., drilling 4,035 ft.

Wilcox Oil & Gas 2 Royer, NW SW NE 18-14-6, slight show oil in Bartlesville, drilling 3,645 ft.

Allied Materials 2 Peck, NE SE NW 35-14-6, dolomite 4,149 ft., T.D. 4,118 ft., acid, flowed 18 bbl. oil and 10,000,000 cu. ft. gas and some water, crude 18 gravity.

McIntosh County: Phillips 1 McVey, W½ SE NE 1-10-13, McAlister 1,495 ft., Warner 1,605 ft., Harthorne 1,759 ft., drilling 2,195 ft.

Muskogee County: France Paris 1-A Clark, E½ SE NE 32-13-19, fishing 368 ft.

Okfuskee County: John Droppleman 1 Wahola, NE NE SW 15-11-10, perf. 3,144-52 ft. in Cromwell, gaged 3,500,000 cu. ft. gas and spray salt water, testing.

Oklahoma County: Harper & Turner 1 Yeager, SW SE NE 32-14-3w, T.D. 6,325 ft., no show.

Pontotoc County: Bob Minnick 1 Adcock, SE NW NE 21-4-6, 5½-in. 1,464 ft.

Lake Oil 1 O. Moore, SE NW NE 28-5-4, drilling 2,383 ft.

Pottawatomie County: Kerlyn 1 Kirk, NW NE SW 1-8-4, T.D. 4,535 ft., perf. 4 holes 4,389-90 ft., salt water, to P.B. to test dolomite.

Crosbie & Atlantic 1 Hudson, NW NW NW 11-9-4, Woodford 4,210 ft., Hunton 4,331 ft., cored Hunton 4,346-65 ft., show oil, drilling ahead.

Seminole County: Mico Oil 1 Kidd, NE SW SE 33-10-8, old well P.B., set pipe 2,154 ft., drilled out and flowed 70 bbl. from Senora 2,145-48 ft., swabbed 32 bbl., testing.

South and Southwest

Caddo County: Amerada 1 Sprages, SE NW 11-8-12w, T.D. 8,558 ft., electrical log, to run 7⅝-in. protection string.

Denver Producing & Refining 1 Sah-Cam, SE SE 33-10-10w, drilling 11,589 ft.

Carter County: Carey-Norbury 1 Kern, SE NW SE 20-3s-1w, fishing 2,272 ft.

Comanche County: Texas 1 Gamble, SW NE SE 5-3-10w, drilling 5,678 ft. in Woodford.

Texas 1 School Land-B, SW SW 13-4-11w, Mississippian Caney 4,352 ft., drilling 4,576 ft.

Denver Producing & Refining 1 Hayes, NE NE SW 14-4-11w, drilling lime and shale 3,156 ft.

Coal County: Magnolia 1 Pope, SE SE NE 34-1-9, running 8¾-in. 1,475 ft.

Jackson County: Rhinehart & Donovan 1 Petzold, SE SE NE 20-3-20w, completed derrick to fish drill pipe, T.D. 3,791 ft.

Jefferson County: T. N. McLaughlin et al 1 Coffer, SW SE SW 26-4s-9w, first report.

Kiowa County: E. M. Thomason 1 Baker, NW NE NW 7-6-18w, drilling 850 ft.

J. G. Hughes 1 Dugger, NE SW SW 14-6-18w, drilling 2,038 ft.

Stauffer Petroleum 1 Mayo, NE NE NW 13-6-18w, underreaming 7-in. 1,035 ft.

B. G. Walrick 1 Wayne, NE SE SE 2-7-18w, S.D. 845 ft.

McClain County: Patsy Oil 4 Caldwell, SE NE SE 16-5-3, electrical log at T.D. 3,462 ft., showed stain in Viola 3,530-70 ft., will test.

Stephens County: Glen Grimes et al 3 Baker, SE SW NE 35-2s-6w, T.D. 1,855 ft., show oil and water, recemented casing.

AVERAGE DAILY PRODUCTION
LEADING OKLAHOMA FIELDS

	Nov. 22	Nov. 15
Allen	4,125	4,100
Billings	6,300	6,325
Burbank	8,375	8,400
South Burbank	7,750	7,725
Balance Osage	18,200	18,325
Blackwell district	3,350	3,300
Bristow-Slick	6,250	6,300
Cement	12,550	13,900
Coyle	4,050	4,100
Crescent	1,400	1,425
East Cromwell	4,475	4,450
Cromwell	2,825	2,850
Cumberland	9,500	9,350
Cushing-Shamrock	8,825	8,750
Dill	2,400	2,450
Duncan	3,300	3,350
Edmond	3,300	3,325
Fish	3,950	4,000
Fitts	10,100	10,250
Jesse	1,950	1,975
Graham-Fox	2,025	2,075
Guthrie	3,325	3,250
Healdton	8,350	8,300
Hewitt	14,100	14,250
Keokuk	2,975	2,925
Konawa	1,025	1,050
Lucien	5,550	5,600
Moore	875	850
Northeastern counties	17,400	17,250
Oklahoma City	81,950	81,250
Olympic	1,600	1,650
Ramsey	4,600	4,650
Sasakwa	1,150	1,125
Sholem-Alechem	2,375	2,450
Stroud, East	1,500	1,850
Seminole district:		
Bowlegs	5,675	5,650
Carr City	2,100	2,125
Dora	1,225	1,250
Earlsboro	3,500	3,475
East Earlsboro	1,525	1,550
South Earlsboro	525	550
Little River	6,150	6,175
East Little River	550	600
Mission	1,150	1,200
Seminole	6,025	6,050
East Seminole	825	850
Searight	1,850	1,825
Total Seminole	29,100	31,300
St. Louis-Pearson	16,550	17,100
Tatums-Tussy	5,050	5,025
Wewoka	1,500	1,525
Yale-Jennings	3,350	3,325
Total Oklahoma	427,100	427,650

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Simpson Sand Discovery Is Showing in Rice County

By ROBERT INGRAM

ALTHOUGH several sands in the Simpson group are excellent producers in Oklahoma, these sands have never been a major objective for Kansas operators as the productivity of Simpson producers has been small up to the present time. The Wilcox, Bromide, Tulip Creek and other Simpson producing horizons are much better than the overlying Viola or the underlying Arbuckle, while these lime pays constitute two of Kansas' principal producers.

One reason for the lesser importance of sand production in Kansas is the fact that structures are broad and have low relief in contrast to Oklahoma sand producing fields. The occurrence of oil in Kansas limestones is governed by the distribution of porosity rather than structure and there is no particular reason for expecting accumulation in a sand to lie above or below these porous zones.

For the second time in as many weeks, however, Simpson pay was found last week in western Kansas and at least one of the strikes may have major significance. That was the Pryor & Lockhart 2 Gant-C, N½ NE 18-31-13w, which apparently opened a new pay zone for the Lake City pool of Barber County 2 weeks ago. Importance of the Lake City strike was that the pool is far southwest of the axis of the Barton arch and is probably more related regionally to the Anadarko basin to the south than to the arch. Should Simpson production in this sector prove important, it would establish the existence of possible Simpson production over the entire floor of the eastern part of the basin from southern Oklahoma to southern Kansas.

The second discovery was in the heart of the western Kansas play in Rice County. It was Ingling & Parker 1 Jeter, E½ SE SE 3-21-9w, which logged saturation in a 5½-ft. penetration of the Simpson sand topped at 3,349½ ft. At week's end, crews were rigging up standard tools preparatory to drilling out cement plug in 4½-in. casing set on top of the sand.

SUMMARY OF COMPLETIONS

Kansas

	No.	Bbl.	Footage
Oil wells: Fields	20	22,454	65,003
Wildcats	2	265	7,892
Dry holes: Fields	9	.....	27,560
Wildcats	2	.....	4,658
Total	33		105,113
Recompletions	2	3,198	.....

Nebraska

	No.	Bbl.	Footage
Dry holes: Wildcats	1	.....	4,832

The Jeter test marks the third Simpson sand oil pool for Rice County. Others are on the flanks of the Lyons gas field and in the Geneseo pool in the northern part of the county. The Jeter well is 1 mile east of the town of Alden and 3 miles north of the Alden gas pool, which produces from the Misener sand on the southeast flank of the Barton arch. Regional position is near the eroded shore line of the Simpson sand and stratigraphy as well as a north-south structural terrace influences local accumulation.

Two Zones Show Saturation

In Pawnee County Test

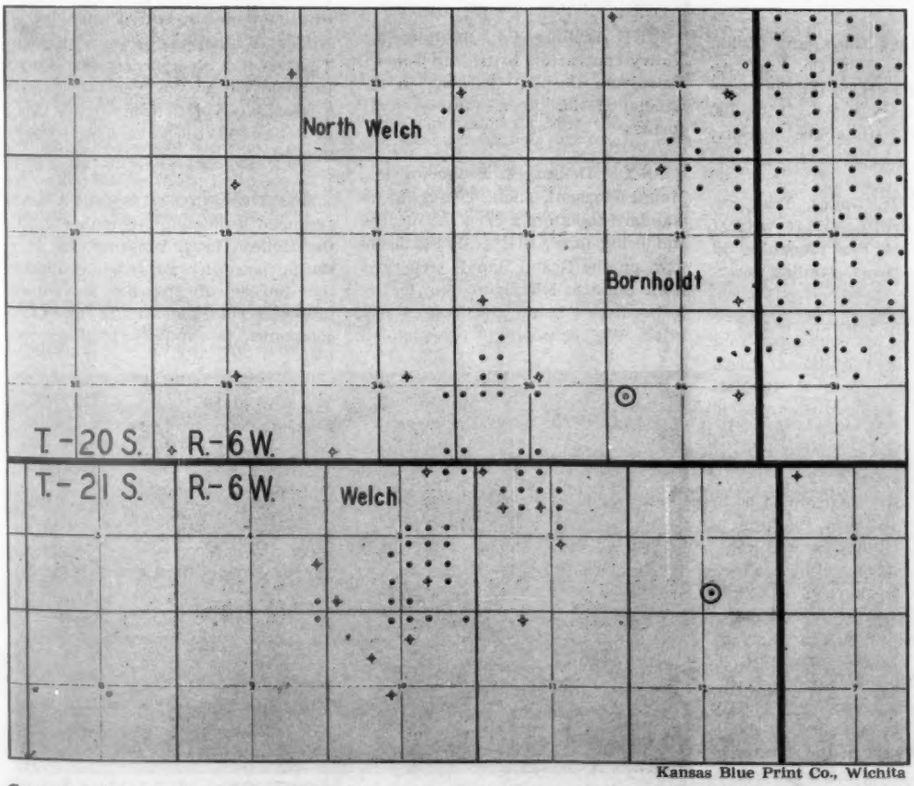
Pawnee County, where the Pawnee Rock pool has dominated the play for some months past, had an interesting test last week at Skelly 1 Yeager, W½ SW SW 32-22-15w, 8 miles southeast of the town of Larned and 7½ miles northwest of the Macksville pool. Casing was set near the bottom and it was to be perforated this week for a test of saturation logged from 3,358-69 ft. in the Lansing-Kansas City lime series and from 3,980-88 ft. in the Simpson sand series.

Lansing was topped at 3,555 ft.; Viola lime, 3,881 ft.; Simpson shale, 3,961 ft.; Simpson sand, 3,973 ft.; and Arbuckle dolomite, 4,000 ft. Total depth was 4,025 ft.

Bartlesville Pool Likely

In Cowley County

A new Bartlesville sand pool loomed for Cowley County 4 miles north of the Carson pool. Oil Interests, Inc., 1 Poovey, NW NW SE 7-32-3e, set casing at 3,093 ft. for a test of saturation logged in the first foot of the Bartlesville sand, which was topped at 3,093 ft.



Kansas Blue Print Co., Wichita

Connection between the Welch and Bornholdt pools of Rice County has been indicated by performance of the wildcats circled above. To the south is Aladdin Petroleum Co. 1 Lackey, a 278-bbl. discovery, and north of it is Westgate-Greenland 1 Harder, which is testing a show

KANSAS COMPLETIONS

Wildcats

Barber County: Cities Service 1 Barber, NE NE NE 27-9-22w, dry, T.D. 4,058 ft., anhydrite 1,813 ft., Topeka 2,830 ft., Lansing 3,550 ft., Arbuckle 4,018 ft.

Barton County: Helmerich & Payne et al 1 S. Unruh, W½ SW NW 17-20-15w, pumped and flowed 194 bbl. oil and 24 bbl. water in 8 hr., potential 583 bbl., 28.5 gravity, Arbuckle dolomite, 5-in. 3,874 ft., perf. 3,814-24 ft., acid, tops: anhydrite 1,100 ft., Topeka 3,196 ft., Lansing 3,506 ft., Arbuckle 3,799 ft., T.D. 3,874 ft., *discovery*.

Graham County: Cities Service 1 Montgomery, SE SE NW 7-8-23w, pumped 71 bbl. oil and 71 bbl. water, 39.2 gravity, Lansing 3,550 ft., 4-in. 3,625 ft., shot 3,725-32 ft. and 3,744-58½ ft., acid, tops: anhydrite 1,970 ft., Fort Riley 2,660 ft., Arbuckle 3,980 ft., T.D. 4,018 ft., *discovery*.

Jefferson County: Stewart & McLaughlin et al 1 Otts, SE NW SW 17-11-20e, dry, T.D. 600 ft.

Fields

Bemis, Ellis County: Cities Service 2 Slimmer, W½ NW NW 19-11-16w, dry, T.D. 3,441 ft., Arbuckle 3,434 ft.

Bloomer, Ellsworth County: Magnolia 5 M. Zink, N½ NW SW 32-17-10w, pumped 1,096 bbl., Arbuckle 3,234 ft., 5-in. 3,236 ft., acid, T.D. 3,247 ft.

Brandt, Butler County: Adair & Morton 2 Sawyer-B, SE NE SW 10-28-7e, pumped est. 80 bbl., Mississippi 2,730-34 ft. and 2,870-78 ft., 6-in. 2,730 ft., T.D. 2,878 ft.

Davidson, Barton County: H. H. Blair 1 Foster-A, N½ NE NW 4-16-11w, pumped 371 bbl., Arbuckle 3,194-3,201 ft., 5-in. 3,194 ft., acid, T.D. 3,214 ft.

Dubuque, Russell County: I. W. Murfin et al 2 Janne, E½ SW SE 27-15-12w, dry, T.D. 3,352 ft., Arbuckle 3,324 ft.

Forest Hills, Russell County: Central Petroleum 1 Meier, S½ SW SE 20-15-12w, pumped 1,536 bbl. oil and 366 bbl. water, Arbuckle 3,313 ft., 5-in. 3,313 ft., T.D. 3,334 ft.

Frog Hollow, Cowley County: Phillips 2 Lena, NE SE SE 17-32-5e, flowed 1,086 bbl., Bartlesville 3,040-64 ft., 5-in. 3,025 ft., shot, T.D. 3,064 ft.

Graber, McPherson County: Continental Oil et al 12 Goering, W½ W½ SW 29-21-1w, pumped 404 bbl., Hunton 3,264 ft., 5-in. 3,216 ft., acid, T.D. 3,281 ft

Greenvale, Russell County: Central Petroleum 4 Kuhnle, NW SE SW 4-15-12w, pumped 417 bbl., Lansing 3,045 ft., 6-in. 3,045 ft., acid, T.D. 3,059 ft.

Hall-Gurney, Russell County: J. J. Hall 14 Guv Miller-D, E½ SW NE 31-14-13w, pumped 310 bbl., Gorham sand 3,108 ft., 5-in. 2,858 ft., acid, T.D. 3,113 ft.

Phil-Hal Oil 7 Letsch, N½ NW NW 34-14-13w, pumped 1,326 bbl., Lansing 2,866 ft., 7-in. 2,866 ft., acid, T.D. 2,883 ft.

Kraft-Prusa, Barton County: Shell Oil 5 Harzman, NE SW SW 33-16-11w, pumped 2,811 bbl., Arbuckle 3,351 ft., 4-in. 3,352 ft., acid, T.D. 3,356 ft.

Krier, Barton County: B. B. & M. 2 Krier-C, E½ NW SE 30-16-11w, flowed 153 bbl., Lansing 3,009-19 ft., 5-in. 3,065 ft., acid, T.D. 3,080 ft.

Lost Springs, Marion County: Loriaux & Harrington 4 Novak, SE SW SW 28-17-4e, pumped 619 bbl., Mississippi 2,396 ft., 5-in. 2,399 ft., T.D. 2,419½ ft.

Macksville, Stafford County: Stanolind 3 Nagel, E½ NW SW 3-24-15w, dry, T.D. 4,150 ft., Arbuckle 4,131 ft.

McLouth, Jefferson County: E. V. Jackson et al 1 Bank of McLouth, SW NW 20-9-20e, dry, T.D. 1,598 ft., Mississippi 1,439 ft.

William Smyth 1 Federal Land Bank, SW NE 29-9-20e, dry, T.D. 1,676 ft., Mississippi 1,485 ft.

Phillips, Ray County: Cities Service 2 Noel, SW SW SE 29-5-20w, pumped 2,374 bbl., La Motte sand 3,576 ft., 5-in. 3,577 ft., T.D. 3,584 ft.

Cities Service 2 Hansen-B, SW SW NW 33-5-20w pumped 2,049 bbl., La Motte sand 3,555 ft., 5-in. 3,554 ft., T.D. 3,566 ft.

Rattlesnake, Stafford County: Derby Oil et al 1 Harrison, SW NW SE 13-24-14w, dry, T.D. 3,838 ft., Lansing 3,581 ft.

Rick, Barton County: Cities Service 3 Rader, SW NW NW 12-19-11w, old well, pumped 198 bbl. oil and 16½ bbl. water, Lansing 3,105-33 ft., old T.D. 3,386 ft., P.B. 3,263 ft.

Rickard, Rice County: Aylward Production 1-A Burch, SE SE NE 21-18-9w, pumped 393 bbl., conglomerate 3,250 ft., 7-in. 3,220 ft., T.D. 3,258 ft.

South Silica, Rice County: Lauck Petroleum 3 Berscheidt, E½ NW SW 18-20-10w, dry, T.D. 3,329 ft., Arbuckle 3,320 ft.

Smokey Hill, Russell County: Eldorado Refining 1 Michel, N½ NW NE 2-15-14w, dry, T.D. 3,215 ft., Arbuckle 3,205 ft.

Stafford, Stafford County: F. C. Hall 1 O'Connor, W½ NE NW 14-24-12w, flowed 3,000 bbl., Viola 3,839 ft., 7-in. 3,813 ft., T.D. 3,843 ft.

Stanolind 6 Crawford, E½ NW NE 15-24-12w, flowed

(Continued on Page 94)

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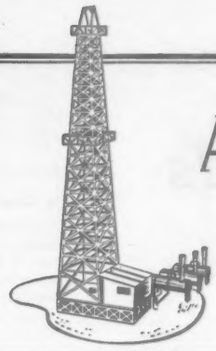


Among the Drilling

HOUSTON Drilling Co., Houston, Tex., is attempting to extend the North La Ward field, Jackson County, Texas, approximately 4,500 ft. southwest in Gulfboard Oil Corp. 1 Dickey which is being prepared for a production test in the Marginulina sand at 5,200 ft.

MABEE Drilling Co., Midland, Tex., and Los Angeles, Calif., has the contract to drill another well on the Los Flores property in the West Cat Canyon field of Santa Barbara County, California, for Standard Oil Co. of California. Rig is being erected at location for 4 Los Flores. The contractor recently drilled 3 Los Flores to 6,100 ft., where it is being tested.

ROWAN Drilling Co., Houston, Texas., is moving a rotary east of the Cordell field, Jackson County, Texas, for its 1 J. Cullouch, in the A. B. Williams Survey.

BOBBY MANZIEL, Tyler, Tex., has contracted to drill Ryan Consolidated Oil Co. 1 Wright, a Woodbine sand wildcat test in the J. M. Garcia Survey, 4 miles south of Crow in northern Smith County, Texas.

UNION Rotary Corp. and Union Drilling & Producing Co. have assigned tools to location for the latter company's 1 Kelly Sisters, C S½ SE NE 29-22n-7w, Missaukee County, Michigan.

TEX HARVEY, Dallas, Tex., has contracted to drill a 4,500-ft. wildcat test projected to the Woodbine in Rains County, Texas, 2 miles northwest of Emory. The contractor acquired an interest in the 7,000-acre block which was assembled for Tom Hunter and Elbert Williams. Location is on the 117-acre R. B. Hall lease in the B. Johnson Survey.

GLENN H. McCARTHY, Houston, Tex., is drilling below 8,350 ft. in his 1 Crawford, in the Stowell area, Jefferson County, Texas. In the new Magnolia area, Montgomery County, Texas, which was opened by the contractor several weeks ago, locations for two wells were made and material is expected to be moved in at an early date. The wells are 1 H. T. Tucker in the Houston Survey southwest of the discovery well and 1 South Texas Development Co., about 3½ miles southwest of the discovery well in the L. Long Survey.

CHRISTIAN Drilling Co. of the San Joaquin Valley, California, has contracted to drill a new well for Eyer Oil Co. in the Mount Poso field near Bakersfield.

DALLMEYER & BREWER, Mount Pleasant, Mich., have been awarded contract for Regal Dutch Petroleum Co. 1 Lena Niers, C E½ NE NE 12-4n-13w, Allegan County, Michigan.

ROCKY MOUNTAIN Drilling Co., of Los Angeles, Calif., has contracted to drill a new test for Barnsdall Oil Co. on the Ripperdan lease, Raisin City field, Fresno County, California.

HARRY L. EDWARDS Drilling Co., Houston, Tex., is drilling below 7,628 ft. in Cities Service Oil Co. 1 Lacassine, a wildcat in the Lake Arthur area, Jefferson Davis Parish, Louisiana. Along the Texas Coast, drilling was started in the Fannett area, Jefferson County, Texas, for W. P. Luse, while in the St. Charles area one rig is running for Continental Oil Co. on the St. Charles Co. lease, about 1 mile east of production. In the Dickinson field, Galveston County, Texas, another operation was started for Pan American Production Co.

PIKE Drilling Co., San Joaquin Valley contractor, is drilling General Petroleum Corp. 2 Clarksig, in the Greeley field, Kern County, California.

UNION Drilling & Producing Co., Mount Pleasant, Mich., is rigging up standard tools for a deep test on the Riddering farm, C E½ SE SE 30-7n-12w, on the Grand Rapids structure, Kent County, Michigan. The test is to be drilled below the Monroe pay in the Walker pool and is scheduled to penetrate the St. Peter formation. The deep exploratory well is financed by a cooperative agreement among operators in the vicinity and will be drilled under direction of a committee representing interested parties.

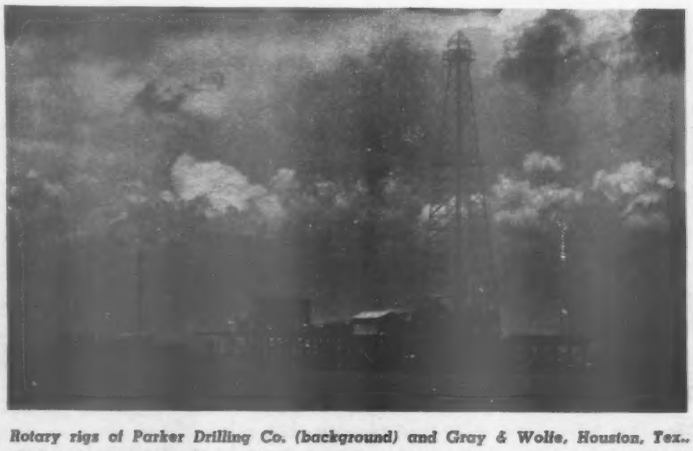
HENSHAW BROTHERS, San Antonio, Tex., are moving a rotary 2½ miles south of Hebronville for a projected 4,300-ft. wildcat located on the T. E. East lease, which was obtained on a farmout from Sun Oil Co.

KERN Drilling Co., of Bakersfield, Calif., is drilling C. G. Willis et al 1 Ferguson, near Newhall, Calif.

PULSE Drilling Co., Hutchinson, Kans., have the contract for a wildcat near the town of Kit Carson in eastern Colorado, ½ mile north of a test drilled in 1938 by Gulf Oil Corp. The well will be known as O. E. Torrey 1 Whitson, NW SE 12-13s-49w. The company also holds acreage in the 30,000-acre block on which the test is located.

BUTLER & HORNE Drilling Co., Dallas, Tex., has been given contract to deepen the Mitchell County, Texas, wildcat, Willbanks Brothers 1 Brown. The test will be drilled from 1,000 ft. to 3,000 ft. The wildcat is located 6 miles west of Colorado City, Tex., in Section 43, Block 27, in the T.&P. Survey.

EASTERN CONTRACTORS have arranged a meeting November 28 at the Holley Hotel, Bradford, Pa., for the purpose of organizing to oppose the Bureau of Internal Revenue's proposed rule that would force oil companies to capitalize drilling ex-



Rotary rigs of Parker Drilling Co. (background) and Gray & Wolfe, Houston, Tex., drilling for British American Oil Co. at submerged locations near Sabine Pass, Jefferson County, Texas

Contractors

pense incurred in contract operations. Early last week, a committee was appointed to head the protest that is to be made against the proposal. The committee is composed of Milton Titus, J. F. Flanigan and Robert Slike of Bradford; Paul Kahle, Duke Center, Pa.; Wesley Vaughn, Eldred, Pa., and O. S. Blackman of Allentown, N. Y.

JORDAN Drilling Co., Houston, Tex., is rigging up in the Livingston field, Polk County, Texas, for the company's 1 Rodak, in the A. Viesca Survey. The well is expected to be drilled to the Wilcox. It will be the first Wilcox test drilled on the structure which produces from the Cockfield sand.

FRANKLIN & TIDEMAN, Houston, Tex., are moving a rotary 12 miles southeast of Hallettsville, La Vaca County, Texas, for John Mayo and Stewart Boyle. The well is in the Moses Wooten Survey, and is scheduled to be drilled to the Wilcox.

E. G. THOMPSON, Mount Pleasant, Mich., has taken contract to drill L. S. Schrot 1 Thelma Lintz, SE SE SE 3-25n-2w, in Crawford County, Michigan.

HELMERICH & PAYNE, Inc., have the drilling contract, and are moving in material for a new Crockett County, Texas, wildcat, planned as a 6,500-ft. operation. The test was staked by J. B. Moncrief, Fort Worth independent operator, on the J. C. Couch lands, Section 30, Block QR, in the G.C.&S.F. Survey, on a 2,700-acre lease farmed out by Texas Co.

C. W. TEATER, Mount Pleasant, Mich., has taken contract to drill Shakespeare et al 1 City of Cadillac, C W½ SE NE 35-23n-10w, a wildcat test in Wexford County, Michigan, a northern outpost to Michigan activity that has spread in that direction since discovery of the Reed City field which is about 25 to 30 miles south.

L. T. BARBER, Mount Pleasant, Mich., is preparing to drill Belvidere Oil Co. 1 Moor, SW NW NW 21-13n-5w, Isabella County, Michigan.

A. Z. SKEETER, drilling contractor, Kilgore, Tex., is moving in material after receiving the contract to drill a 5,500-ft. wildcat northwest of the Hawkins field, Wood County, Texas. The test will be known as 1 G. A. Green and is located in Block 8, James Candler Survey. J. C. Moore gave the contract.

RHODES Drilling Co., Abilene, Tex., is rigging up for a test to be drilled for Anderson-Prichard Oil Corp., 934 ft. north of 1 Mary Hoefle, of Taubert-McKee, in A. James Survey, southeast of Antelope in Jack County, Texas. The test will go to a depth of 4,800 ft.

E. B. GOODEN, drilling contractor, recently moved his headquarters from Princeton, Ind., to Mount Carmel, Ill.

Delta Drilling Co. operating heads and crew on East Texas operation: Jimmie Lynch, drilling superintendent; Speck Cooper, Baroid Sales Co.; R. C. Johnston, general superintendent; Abe Martin, driller; C. W. Gold, helper; T. E. Arthur, derrickman, and Lee Brown, helper

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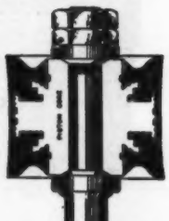

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Southwest Texas Fields

(Continued from Page 90)

Odem, San Patricio County: Seaboard 1 Parker, temporarily abandoned, T.D. 6,948 ft.

Wellington 3-B Welder, temporarily abandoned, T.D. 6,945 ft.

Orange Grove, Jim Wells County: Atlantic 4 Schuenmann, 87 bbl., ⅛-in. choke, perf. casing 5,076-79 ft., T.D. 5,086 ft.

Premont, Jim Wells County: Magnolia 1 Seeligson unit 2, 9 bbl. per hour, 9/64-in. choke, T.D. 3,720 ft.

Refugio County: Sun 5 Mitchell, 97 bbl., ⅛-in. choke, perf. casing 6,397-6,401 ft., T.D. 6,587 ft.

Seeligson, Jim Wells County: Magnolia 23 Seeligson, 155 bbl., 7/64-in. choke, perf. casing 5,952-56 ft., T.D. 5,978 ft.

Sun 3 Canales, 96 bbl., 11/64-in. choke, perf. casing 5,199-5,203 ft., T.D. 5,211 ft.

Stratton, Nueces County: Chicago Corp. 19 Wardner, 229 bbl., ⅛-in. choke, perf. casing 5,423-30 ft., T.D. 6,642 ft.

SOUTH CENTRAL TEXAS DISTRICT

Wildcats

Medina County: Ben Banner 1 Haeglin, dry, T.D. 1,720 ft.

Wilson County: Hundred & One Oil Co. 1 Hiholtzer, dry, T.D. 1,058 ft.

Fields

Bee Creek, Caldwell County: Ralph Ogden 12 Talley, 45 bbl., pumping, top chalk 2,245 ft., T.D. 2,313 ft.

Gas Ridge, Bexar County: Gas Ridge Inc. 30 Hamilton, 2 bbl. pumping, sand 411-13 ft., T.D. 465 ft.

Gas Ridge Inc. 48 Hamilton, 2 bbl. pumping, sand 368-70 ft., T.D. 438 ft.

Southwest Drilling Co. 38 Covell, 3 bbl. pumping, top sand 404 ft., T.D. 456 ft.

LAREDO DISTRICT

Wildcats

Brooks County: Allen & Morris 3 Hocker, dry, T.D. 2,617 ft.

Starr County: F. A. Gillespie 2 Guerra, dry, T.D. 1,689 ft.

Webb County: O. W. Killam 2 Puig, dry, T.D. 2,637 ft.

Fields

Casa Blanca, Duval County: Adelon Oil Corp. 2-C Martin, 56 bbl., pumping, sand 1,134-39 ft.

Colorado, Jim Hogg County: Humble 42-B King, 174 bbl., ⅞-in. choke, T.D. 2,844 ft.

Driscoll, Duval County: Continenal 72-A Driscoll, 295 bbl., ¼-in. choke, perf. casing 3,385-3,406 ft., T.D. 3,415 ft.

Labbe, Duval County: W. C. Butler 3 Labbe, 500,000 cu. ft. gas, ⅞-in. choke, perf. casing 1,896-99 ft., T.D. 2,930 ft.

Piedra de Lumbre, Duval County: Magnolia 29 Duval County Ranch, dry, T.D. 2,377 ft.

Rincon, Starr County: W. R. Davis Co., Inc. 113-B Slick, 214 bbl., 12/64-in. choke, perf. casing 3,960-4,005 ft., T.D. 4,280 ft.

Sun, Starr County: Sun 1 Margo, 228 bbl., 5/32-in. choke, perf. casing 4,685-90 ft., T.D. 4,692 ft.

Washburn, La Salle County: Quintana 1-B Washburn, 406 bbl., ¼-in. choke, perf. casing 4,820-30 ft., and 5,530-50 ft., T.D. 5,700 ft.

Kansas Fields

(Continued from Page 91)

3,000 bbl., Viola 3,815 ft., 5-in. 3,815 ft., acid, T.D 3,827 ft.

Trapp, Barton County: Derby Oil et al 1 Bitter, NW NW NE 11-16-14w, dry, T.D. 3,411 ft., Arbuckle 3,386 ft.

West Trapp, Russell County: Phillips 2 Krug, SW SW SE 15-15-14w, pumped 2,007 bbl., Arbuckle 3,287 ft., 5-in. 3,287 ft., acid, T.D. 3,293 ft.

Vaughn, Russell County: Cities Service 1 Vaughn, SW SW SW 17-14-14w, old well, old T.D. 3,052 ft. 1- Lansing, T.D. 3,093 ft., pumped 3,000 bbl.

Wondra, Barton County: C. L. Price 1 Long, E½ SE NW 3-17-12w, pumped 302 bbl., Arbuckle 3,326 37½ ft., 5-in. 3,329 ft., acid, T.D. 3,339 ft.

Miscellaneous, Butler County: Rex & Morris 10 D- Moss-A, NW SE SW 5-28-7e, pumped 45 bbl., Bartlesville 2,690 ft., 6-in. 2,690 ft., shot, T.D. 2,735 ft. W-K Royalty 1 O. E. Sutter, SE SE SE 6-28-7e, abandoned location.

AVERAGE DAILY PRODUCTION
LEADING KANSAS FIELDS

	Nov. 22	Nov. 15
Augusta	1,250	1,250
Bemis-Shutts	11,650	8,850
Bloomer	6,450	7,100
Burnett	11,300	11,700
Burrton	7,200	7,200
Chase	6,400	6,350
Elbing	900	950
El Dorado-Towanda	7,100	7,150
Geneseo	7,200	6,850
Graber	2,000	2,800
Greenwood County	9,100	9,050
Hollow-Nikkel	1,500	1,450
Keesling-Midway	1,100	950
Lerado	550	850
Lorraine	1,150	1,400
Oxford	550	500
Rainbow Bend	950	900
Raymond	2,100	1,450
Ritz-Canton	3,800	3,800
Trapp	21,300	22,450
Balance Russell County	26,950	25,550
Sedgwick County	3,100	3,050
Silica	22,350	20,300
Voshell	1,600	1,650
Wellington	850	850
Wherry	2,350	2,400
Zenith	11,900	11,550
Others	81,600	87,200
Total Kansas	254,250	255,550

Third Producer Nearing Completion at Barada

ST. JOSEPH, Mo., Nov. 24.—Skelly Oil Co. as the week ended was ready to add another new well to its recent discovery, the Barada pool of Richardson County, Nebraska.

The 3 Roesch, W½ SW NW 36-3n-16e, topped the Hunton lime at 2,393 ft. and perforated casing from 2,403-24 ft. and was acidizing. No. 1 Merz, E½ NE NE 35-3n-16e, was rigging up and the 1 Steinbrink, E½ SE NW Section 36, was drilling below surface casing.

Falls City Pool Has Only One Operation

Ohio Oil Co. 9 Bucholz, NW SE NE SW 17-1n-16e, only activity in the Falls City pool in past weeks, was drilling below 1,235 ft. The company also announced it would deepen the 1 Sandrock, early pool producer, in NW NE NW of Section 20. The well was originally drilled to 2,260 ft. by the Pawnee Royalty Co., whose holdings were taken over by Ohio.

Oscar Johnson et al 1 Dowell, 31-2n-15e, Richardson County, was below 1,200 ft. Nelson Drilling Co. 1 Edius, E½ SW of 5-3n-7e, Gage County, was underreaming 12-in. casing at 1,015 ft. Continental Petroleum Co. of Nebraska 1 Gauchart, SW NW NE of 26-6n-13e, 6 miles northwest of Auburn, in Nemaha County, was dry and abandoned at 2,127 ft.

H. Hough et al 1 Timm, in CSL SW SE 15-13n-12e, Sarp County wildcat, was shut down for orders at 597 ft.

Missouri Test Started

Morgan Hammond 1 C. L. Vandereau was moving in 2 miles northeast of Plattsburg, in 18-5n-32w, Clinton County, Missouri. This is in an old shallow gas pool.

NEBRASKA COMPLETION

Wildcat

Lincoln County: W. R. Miller 1 O'Connor ranch, C NW 26-11-34w, dry, T.D. 4,832 ft., Pierre 590 ft., anhydrite 3,535 ft., no Arbuckle, pre-Cambrian 4,810 ft.

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3 CLEARS FIRST FEW THREADS
4 HAVE SMOOTH ROLLED THREADS

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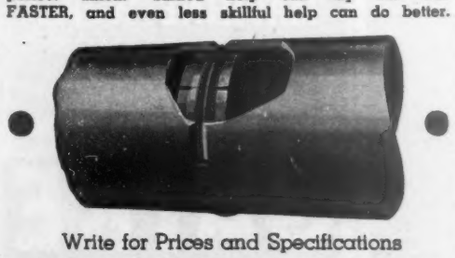

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Jack County Leads District in Activity; Outpost Showing

By D. H. STORMONT

WICHITA FALLS, Tex., Nov. 24.—Activity in the North Texas district last week was restricted to wildcat drilling operations and the location of new tests to be drilled. The most active area in the district was Jack County.

Southwest of Antelope in the Maxey Survey, Alma Oil Co. 1 Maxey was installing pumping unit. The test was plugged back from 5,665 to 5,445 ft. and at the present time has several hundred feet of oil in the hole. No. 1 Maxey was drilled to 5,448 ft. after logging the Marble Falls at 4,830 ft. and the Mississippian at 5,255 ft., and was treated at that depth with 3,500 gal. of acid. Subsequent testing was unable to develop oil production on a commercial basis so operator drilled on to 5,665 ft., total depth. The test was plugged back to 5,445 ft. after failing to open production at total depth. At plugged-back depth, 1 Maxey was treated with 5,000 gal. of acid, followed by a 200-bbl. oil load.

The North La Ward field, in the same county, may be in line for a 1-mile northwest extension. Magnolia 3 Gordin is preparing to make a drill-stem test at 5,223 ft. A core from 5,138-5,223 ft. returned sand, showing oil and gas.

A second test in the Hoefle pool, recently opened by Taubert & McKee, has been staked by Anderson-Prichard Oil Corp. The new operation will be 1 Mary Hoefle, located 467 ft. from the south and west lines of the south 80 acres of the north 160 acres of the A. James Survey, north of the discovery well.

SUMMARY OF COMPLETIONS

North Texas

	No.	Bbl.	Footage
Oil wells: Fargo	2	258	7,915
Griffin	2	428	5,976
Hull Silk	2	258	6,133
K.M.A.	4	775	12,403
Throckmorton	2	68	1,427
Other fields	3	723	10,648
Miscellaneous pools	11	1,603	28,273
Wildcats	1	300	6,008
Gas wells: Throckmorton	1	*.01	735
Dry holes: K.M.A.	2	.....	5,120
Miscellaneous pools	10	.....	15,569
Wildcats	2	.....	2,522
Total	42	.....	102,729

West Central Texas

	No.	Bbl.	Footage
Oil wells: Merkel	2	469	5,220
Wimberly	2	530	2,783
Novice	1	650	3,623
Dry holes: Fields	2	.....	6,922
Wildcats	4	.....	10,173
Total	11	.....	28,721

*Million cu. ft.

Montague County Wildcat Believed in Viola Lime

The possibilities of opening a new production area as well as a new pay zone in the district are being considered at the Montague County wildcat of Continental Oil Co. The test, 1 Winder, Section 4, Limestone C.S.L. Survey, is now believed to be in the Viola lime of Simpson age, instead of the Mississippian lime.

Having identified the formation from 6,508-6,610 ft., total depth, as the Viola, operator treated the test with 3,000 gal. of acid. Later, after a 9-hour shut-in period, 1 Winder flowed 90 bbl. of oil through 2-in. casing outlet and then died. Operator swabbed the well into pits for 5 hours, after which it swabbed and flowed 90 bbl. of oil and 10 bbl. of acid water in 11 hours. At the end of the week, testing operations were continuing.

Three Wildcats Staked

In the Chico area of Wise County, H. L. Hunt has staked his third wildcat test as 1 T. H. Stack. Location is 387 ft. from the south line and 554 ft. from the east line of a 20-acre lease in the Adam Johnson Survey, 2 miles southwest of the town of Chico. No. 1 Stack is contracted to 6,000 ft.

The other two tests being drilled by Hunt in the area are 1 Halman, G. W. Cash Survey, and 1 Briley, A. Johnson Survey. No. 1 Halman is drilling below 1,000 ft. on a 6,000-ft. contract, while 1 Briley, a scheduled 7,000-ft. test, is preparing to start.

A new deep test for Montague County is planned by Continental. The firm has staked location for a 7,500-ft. wildcat 4 miles east of Bowie. The test, 1 Pearl Mueller, is located 467 ft. from the southwest and southeast lines of a 109-acre tract in the F. Hamilton Survey, Abstract 335. Continental has a 5,000-acre spread of leases in the area.

A new wildcat location for Throckmorton County was staked during the week. W. Newstadt announced the location of 1 T. E. Morrison, scheduled 4,500-ft. test, as 660 ft. from the north and east of Block 1614, T.E.&L. Survey.

NORTH TEXAS COMPLETIONS

Wildcats

Cooke County: Bill Russell 1 O. E. Powers, H. Nail Sur. A-790, dry at 1,304 ft.

W. F. Russell 1 C. F. Bundy, P. P. Cady Sur. A-1239, dry at 1,218 ft.

Montague County: J. A. Chapman 1 M. Fowler, J. W. Massie Sur. A-403, 95 bbl. in 2½ hr., ¾-in. choke, est. 300 bbl., top Caddo 5,566 ft., top Simpson 5,805 ft., top Ellenburger 5,831 ft., pay 4,840-57 ft., T.D. 6,008 ft.

Fields

Bryson, Jack County: Panhandle Ref. Co. 5-A C. Derrick, B.S.&F. Sur. A-78, 61 bbl. in 2 hr., ¾-in. choke, est. 450 bbl., pay 3,037-47 ft., T.D. 3,066 ft.

Coleman, Clay County: Shell 1 J. L. Willis, Sec. 5, T.&N.O. Sur. A-678, 233 bbl. in 24 hr.. ¾-in. choke, top Caddo 5,904 ft., 10,000 gal. acid 6,350-6,400 ft., T.D. 6,476 ft.

Fargo, Wilbarger County: Amerada 1-A Geo. W. Leudtke, Sec. 36, Blk. 15, H.&T.C. Sur., 83 bbl. in 8 hr., ½-in. choke, est. 150 bbl., pay 3,920-28 ft., T.D. 3,980 ft.

Amerada 3 J. H. Parker, Sec. 36, Blk. 15, H.&T.C. Sur., 106 bbl. in 24 hr., pumping, 10-qt. shot 3,920-27 ft., T.D. 3,935 ft.

Griffin, Archer County: Deep Oil Dev. Co. 5-A E. P. Griffin, Sec. 13, Palo Pinto C.S.L. Sur. A-339, 78 bbl. in 24 hr., pumping, pay 1,616-21 ft.

Jack E. Kadane 1-D E. P. Griffin, Sec. 14, Palo Pinto C.S.L. Sur. A-339, 93 bbl. in 3 hr., ¾-in. choke, est. 350 bbl., pay 4,330-51 ft.

Hull Silk, Archer County: Humble 11 L. F Wilson, Sec. 125, A.T.N.C.L. Sur., 63 bbl. in 3 hr.. ¾-in. choke, est. 225 bbl., top Caddo 4,563 ft., 2,000 gal. acid 4,312-39 ft., T.D. 4,597 ft.

Henry Grace 3-B L. F. Wilson, Sec. 1, Blk. 87, A.T.N.C.L. Sur., 33 bbl. in 24 hr., pumping, pay 1,530-36 ft.

K.M.A., Wichita County: Hammon, Hanlon-Buchanan 49-C Fassett & Tuttle, E.T. Sur. A-76, dry at 650 ft.

Deep Oil Dev. Co. 4 R. J. Bradley, John Beckman Sur. A-387, 50 bbl. in 3 hr., ¾-in. choke, est. 175 bbl., top Caddo 3,965 ft., top Ellenburger 4,455 ft., 2,850 gal. acid 3,963-92 ft., T.D. 4,495 ft.

Parry Browning 5 W. L. Warren, Sec. 32, K.W.V.F. Sur., 70 bbl. in 24 hr., pumping, pay 1,759-71 ft.

R-G Drilling Co. 5 W. L. Warren, Sec. 33, K.W.V.F. Sur., 55 bbl. in 24 hr., pumping, pay 1,758-67 ft.

Fain-McGaha Oil Corp. 11-B E. P. Griffin, Sec. 2, W. H. Spiller Sur. A-257, 105 bbl. in 3 hr., ½-in. choke, est. 475 bbl., top K.M.A. 3,732 ft., top Ellenburger 4,291 ft., pay 4,298-4,304 ft., T.D. 4,370 ft.

Panhandle Ref. Co. 2 Reiley-Griffin, F. Jordan Sur. A-167, dry at 4,470 ft.

T.C.U., Cooke County: E. B. Russell 5 J. D. Lynn, J. D. Lynn Sur. A-1547, 10 bbl. oil and 6 bbl. water in 24 hr., pumping, pay 1,101-6 ft.

Throckmorton, Throckmorton County: Burk Royalty Co. 16 A. M. Housley, Sec. 28, Comanche Ind. Res., 27 bbl. in 24 hr., pumping, pay 698-715 ft., T.D. 720 ft.

Burk Royalty Co. 17 A. M. Housley, Sec. 28, Comanche Ind. Res., 41 bbl. in 24 hr., pumping, pay 685-707 ft.

Owenwood Pool No. 3 18 A. M. Housley, Sec. 28, Comanche Ind. Res., 10,000 cu. ft. gas, pay 711-31 ft., T.D. 735 ft.

Miscellaneous Fields

Clay County: Staley Oil Co. 5 E. H. Hamilton, Sec. 83, Byers Bros. subd., 10 bbl. in 24 hr., pumping, pay 1,117-40 ft., T.D. 1,148 ft.

John Webb & Sid Taylor 1 E. H. Hamilton, Sec. 84, Byers subd., dry at 1,340 ft.

Perkins & Cullum 20-A C. T. Taylor, Sec. 44, Bacon's subd., 16 bbl. in 3 hr., est. 65 bbl., pumping, pay 1,047-59 ft.

Fisher & Kahn 2 C. T. Taylor, W. Richardson Sur. A-1032, dry at 1,346 ft.

Johnson & Kouri 6 C. T. Taylor, W. Richardson Sur. A-1032, dry at 1,152 ft.

Cooke County: F. W. Merrick 5 J. W. Mourer, B. Anibal Sur. A-5, 13 bbl. in 24 hr., pumping, 5-qt. shot 712-17 ft., T.D. 758 ft.

Jack County: Hanlon-Buchanan 1 J. J. Myers, M. J. Howard Sur. A-1623, dry at 3,601 ft.

Wichita County: Rubsom, Switzer & Winder 19-A W. D. McClure, Sec. 5, G.C.&S.F. Sur. A-363, 3 bbl. in 24 hr., pumping, T.D. 841 ft., P.B. to old T.D. 587 ft., 11 bbl. in 24 hr., old well drilled deeper.

Hanlon-Buchanan 1 S. L. Denney, Wm. Granes Sur. A-81, 16 bbl. oil and 18 bbl. water in 24 hr., top Ellenburger 4,688 ft., 4,000 gal. acid and 210-qt. shot 4,066-4,105 ft., T.D. 4,846 ft.

Magnolia 76 R. S. Allen, Sec. 224, Waggoner Col. subd., dry at 1,965 ft.

Huckleberry & Cline 1-A M. Stone, Sec. 2, G.C.&S.F. Sur. A-758, 45 bbl. in 3 hr., ⅝-in. choke, est. 75 bbl., top K.M.A. 3,600 ft., 2,000 gal. acid 3,595-3,612 ft.

Wilbarger County: W. T. Waggoner 34-AA W. T. Waggoner, Sec. 14, Blk. 13, H.&T.C. Sur., 54 bbl. in 24 hr., pumping, 10-qt. shot 1,688-1,700 ft.

Young County: H. B. Streit 11-B J. W. Jacks, Sec. 23, Young C.S.L. Sur. A-1284, dry at 580 ft.

M. S. Thomas 6 T. R. Dyer, W. W. Stroud Sur. A-1707, 4 bbl. in 24 hr., pumping, pay 567-85 ft.

Pemeta Oil Co. 8-B A. E. Robinson, Sec. 3403, T.E.&L. Sur., dry at 725 ft.

H. Craig 2 C. J. Wright, Sec. 228, T.E.&L. Sur., dry at 1,024 ft.

Shell 2-A J. M. Bloodworth, Sec. 151, T.E.&L. Sur., 98 bbl. oil and 39 bbl. water in 24 hr., pumping, top Caddo 4,150 ft., top Miss. 4,862 ft., pay 4,862-94 ft., T.D. 4,919 ft.

M. R. Stipe 1 Dan Schlegel, Sec. 74, T.E.&L. Sur., dry at 1,121 ft.

W. E. Production Co. 1 B. W. King, Sec. 624, T.E.&L. Sur., 600 bbl. in 6 hr., est. 1,200 bbl., top Marble Falls 4,270 ft., pay 4,270-95 ft., old well drilled deeper.

Dorian 2 K. Grigsby, Sec. 416, T.E.&L. Sur., 65 bbl. in 24 hr., ¼-in. choke, 3,000 gal. acid and 140-qt. shot 4,425-4,443 ft., T.D. 4,510 ft.

Panhandle Ref. Co. 1-A Allar-Hunt, S. Anderson Sur. A-3, dry at 2,715 ft.

NORTH TEXAS ACTIVE WILDCATS

Archer County: Phillips 1 Reilley, "Pendery," SW NW Sec. 13, Blk. 4, H.&T.C. Sur., D.S. test 5,598-5,698 ft., preparing to drill ahead.

Sunray Oil Co. 1 Seibold, 650 ft. from E and 330 ft. from S lines L. P. Jones Sur. A-939, Ellenburger test, preparing to run electrical test, T.D. 5,021 ft.

Dr. K. Van Allen 1 E. C. Kelley, 330 ft. from N and E lines Sec. 68, Harris subd. of Club ranch, preparing to run electrical test, T.D. 5,530 ft.

Golding & Cochran 1 M. J. Kundel, 494 ft. from S and 750 ft. from W lines of M. J. Kundel land in B.B.B.&C. Sur. A-54, 5,300-ft. rotary test, first report.

Baylor County: Tom F. Hunter 1 Robertson C.S.L., 4,590 ft. from N and 460 ft. from E lines of Robertson C.S.L. Sur. A-280, 3,500-ft. test, testing 3,021 ft.

Clay County: Continental 1 Spring, 200 ft. from N and 1,254 ft. from W lines Sec. 24, M. True Sur. A-1005, 6,500-ft. rotary test, drilling 3,879 ft.

Shell 1 Maddox, 2,272 ft. from N and 2,114 ft. from W lines Hughes Sur. A-179, fishing drill pipe, T.D. 5,700 ft.

Shell 1 B. Williams, 330 ft. from N and W lines E 60 ac., Sec. 63, J. H. Belcher Sur., 6,500-ft. rotary test, drilling 5,592 ft.

Superior Oil Co. 1 G. W. Scaling, 2,600 ft. from N and 1,200 ft. from W lines Sec. 2, H.T.&B. Sur. A-882, 6,000-ft. rotary test, drilling 1,731 ft.

Cooke County: Saulsbury Oil Co. 1 W. D. Rowland, 330 ft. from S and 547 ft. from W lines of NW cor. L. B. Ladlock Sur. A-1027, drilling 2,825 ft.

Denver Producing & Ref. Co. 1 Mattie C. Alred, 330

Field Rules Issued for Five North Texas Pools

The Railroad Commission has issued field rules on five recent discoveries in North Texas: the Hoefle field of Jack County, the Rock Crossing (Ellenburger) field of Wilbarger, Antelope (Mississippi) and New York City pools in Clay, and Scotland (Mississippi) in Archer County.

The new orders provide for 933-ft. spacing between wells and 466-ft. spacing from property lines in the Hoefle; 660 and 330-ft. spacing in the Rock Crossing (Ellenburger), Antelope (Mississippi) and Scotland (Mississippi); and 1,320-ft. spacing between wells in New York City. Proration units of 20 acres with 40-acre units optional is provided for Hoefle, 20-acre units for Rock Crossing, and 40-acre units for the other three pools.

In the Hoefle field the allowable is to be distributed on a basis of 50 per cent per well and 50 per cent acreage; in Rock Crossing on a 25 per cent per well and 75 per cent acreage; in Antelope, New York City and Scotland the allocation is made on the basis of one-third per well, one-third acreage and one-third bottom-hole pressure.

ft. from S and 990 ft. from E lines of Alred farm, Guadelupe Santos Sur., preparing to cement 4,582 ft.

Denton County: Hunt Oil Co. 1 T. J. Jones, 4,300 ft. from S and 671 ft. from E lines J. Thomas Sur. A-1239, Ellenburger test, drilling 2,460 ft.

Foard County: Bruce Sullivan 1 McCoy, 467 ft. from N and W lines J. M. Seaton Sur., 6,000-ft. rotary test, drilling 5,913 ft.

Jack County: Parker & Farris 1 Lewis, 467 ft. from S and W lines of E 80 ac., Blk. 2, Navarro C.S.L. Sur. A-443, drilling 1,314 ft.

O. J. Perrin 1 Brumbelow, 1,045 ft. from S and 720 ft. from E lines H. C. Ayers Sur. A-4, S.D. orders 6,007 ft.

Montague County: Benson Bros. 1 Riley, 467 ft. from S and midway between E and W lines of farm, C. Ellis Sur. A-1146, 7,500-ft. rotary test, waiting on orders 7,204 ft.

Continental 1 Winder, 467 ft. from N and E lines S 40 of W 80 of N½ Sec. 4, Limestone C.S.L. Sur., 7,200-ft. rotary test, testing 6,610 ft.

Youngblood, Foree & Stogner 1 C. D. Meador, 467 ft. from SE and SW lines J. B. Miller Sur. A-461, 6,000-ft. rotary test, drilling 4,190 ft.

Throckmorton County: Humble 2 A. McKnight, 2,420 ft. from N and 660 ft. from E lines Sec. 3, D.E.&C. Sur. A-1264, 4,500-ft. rotary test, waiting on cement 257 ft.

Jans-Stasney & Groover Rose 1 C. T. Brochman, 660 ft. from S and W lines Sec. 94, Comanche Ind. Res., 4,800-ft. rotary test, first report.

Wilbarger County: Bruce Sullivan 1 Nattie Hamilton, 467 ft. from NE line of Nattie Hamilton tract, Sec. 47, Blk. 12, H.&T.C. Sur., 4,700 ft. rotary test, drilling 320 ft.

Wise County: Hunt Oil Co. 1 W. H. Halman, 700 ft. from N of road and 1,100 ft. W of railroad in G. W. Cash Sur. A-166, 6,000-ft. rotary test, waiting on cement 515 ft.

Young County: Kerlyn Oil & Phillips 1 E. C. Garvey, 947 ft. from N and 2,353 ft. from E lines Sec. 4, O.B.&N. Sur. A-19, 5,700-ft. rotary test, drilling 5,257 ft.

Panhandle Ref. Co. 1 Harrell, 467 ft. from S and E lines G. N. Smith Sur. A-254, 3,700-ft. rotary test, moving in spudder 3,570 ft.

Fisher and Haskell County Wildcats Testing

FORT WORTH, Tex., Nov. 24.—Activity in the West Central Texas district last week centered around a Fisher County wildcat, which is preparing to test oil shows, and a Haskell County wildcat, which has encountered salt water after indicating the possibility of opening a new pool.

In Fisher County, Shell 1 J. H. Vaughn, Section 205, Block 3, H.&T.C. Survey, 20 miles northwest of Sweetwater, is testing through casing perforations above 6,540 ft. The wildcat was drilled to 6,821 ft. in the Ordovician but failed to find production so operator plugged back to 6,540 ft. Previously, 5½-in. casing had been cemented at 6,793 ft. At last reports, the test was swabbing some oil-cut mud through casing perforations. No. 1 Vaughn is being drilled on the firm's 15,000-acre Captola block in the southwestern part of the county.

The Haskell County wildcat being drilled by Edward C. Lawson at 1 C. C. Rose, 7 miles east of the town of Haskell, has encountered salt water, which may mean failure for this first attempt at production from a wildcat in this county. Early in the week, operator attempted to set casing on top of the pay at 2,982 ft. but was unable to lower it below 2,872 ft. When plug was drilled the hole filled with salt water, the source of which could not be determined. Operator was to run liner to the top of the sand during the week for another attempt at completion, but the result of this test has not been reported.

Two Wildcats Staked

In the area between the Avoca field of northeastern Jones County and the Ivy field of northwestern Shackelford County, Merry Brothers & Perini have spudded 1 A. H. Lundgren, scheduled Palo Pinto lime wildcat. The test, which will attempt to link the two pools, is being drilled on the basis of subsurface geological work. Location is in the center of the NE of the W½ of the NW of Section 20, Block 3, H.&T.C. Survey, in Jones County.

The second wildcat announced for the district during the week was staked in Stephens County. It will be drilled by S. A. Pace as 1 H. A. Pockrus, located on a 40-acre lease in Section 71, Block 6, T.&P. Survey, 13 miles northeast of Ranger. At the end of the week, operator was moving in material. No. 1 Pockrus is contracted to 3,700 ft.

WEST CENTRAL TEXAS COMPLETIONS

Wildcats

Comanche County: W. G. Forson 1 T. G. Sleiger, J. Harrison Sur., dry at 835 ft.

Eastland County: R. H. Gaddy 1 H. V. Vestal, Samuel Damon Sur., dry at 2,653 ft.

Palo Pinto County: Hickok & Reynolds 3 R. H. Gauldin, Sec. 1756, T.E.&L. Sur., dry at 5,200 ft.

S. A. Jones 1 J. F. Rogers, Sec. 894, T.E.&L. Sur., dry at 1,485 ft.

Fields

Carlile, Stonewall County: Leader Oil Co. 1. B. E. Bilberry, Sec. 320, H.&T.C. Sur., Blk. D, dry at 5,700 ft.

Crosscut, Brown County: R. H. Roark 1 W. F. Lawson, J. M. Harris Sur. 784, dry at 1,222 ft.

Merkel, Taylor County: Lewis Prod. Co. 1 O. R. Golightly, Lot 7, Grimes C.S.L. Sur., 269 bbl. in 24 hr., pumping, pay 2,591-2,608 ft., T.D. 2,610 ft.

Staley Oil Co. 1 B. Morgan, Lot 8, Grimes C.S.L. Sur. 124, 76 bbl. in 8 hr., est. 200 bbl., pay 2,595-2,610 ft.

Novice, Coleman County: States Oil Corp. 1-B W. L. White, Sec. 21, Blk. 2, T.&N.O. Sur., 254 bbl. in 6 hr., est. 650 bbl., pay 3,537-3,623 ft.

Wimberly, Jones County: Clark & Cowden 1 A. M. Wimberly, Lot 106, Godwin Subd. of De Witt C.S.L. Sur. 126, 129 bbl. in 6 hr., est. 350 bbl., pay 2,215-35 ft.

J. L. Collins & Co. 1 O. J. Fikes, Lot 105, Godwin subd. of De Witt C.S.L. Sur. 126, 180 bbl. in 24 hr., pumping, pay 2,525-48 ft., old well drilled deeper.

WEST CENTRAL TEXAS ACTIVE WILDCATS

Brown County: R. M. Ragsdale 1 O. B. Richardson, 1,977 ft. from N and 700 ft. from W lines J. L. Phinn Sur., 1,200-ft. cable-tool test, first report.

G. A. White 1 Moore, 1,311 ft. from W and 789 ft. from N of SE John M. Ross Sur. 610, 1,000-ft. cable-tool test, first report.

Callahan County: Rhodes Drilling Co. E. R. Seale, 2,310 ft. from S and W lines Lewis Johnson Sur. 252, 1,250-ft. cable-tool test, drilling 315 ft.

W. B. Schooler 1 Betcher, 330 ft. from N and W lines Sec. 7, Blk. 6, S.P. Sur., 2,500-ft. cable-tool test, drilling 1,595 ft.

Coleman County: R. M. Coleman 1 W. W. Kingsberry, 3,254 ft. from S and 3,305 ft. from E lines Wharton C.S.L. Sur. 496, 2,300-ft. cable-tool test, moving in spudder.

Anderson-Prichard Oil Corp. 1 Bettie J. Mathews. 467 ft. from N and W lines Lot 2, Hiran Kegans Sur. 520, moving in rotary.

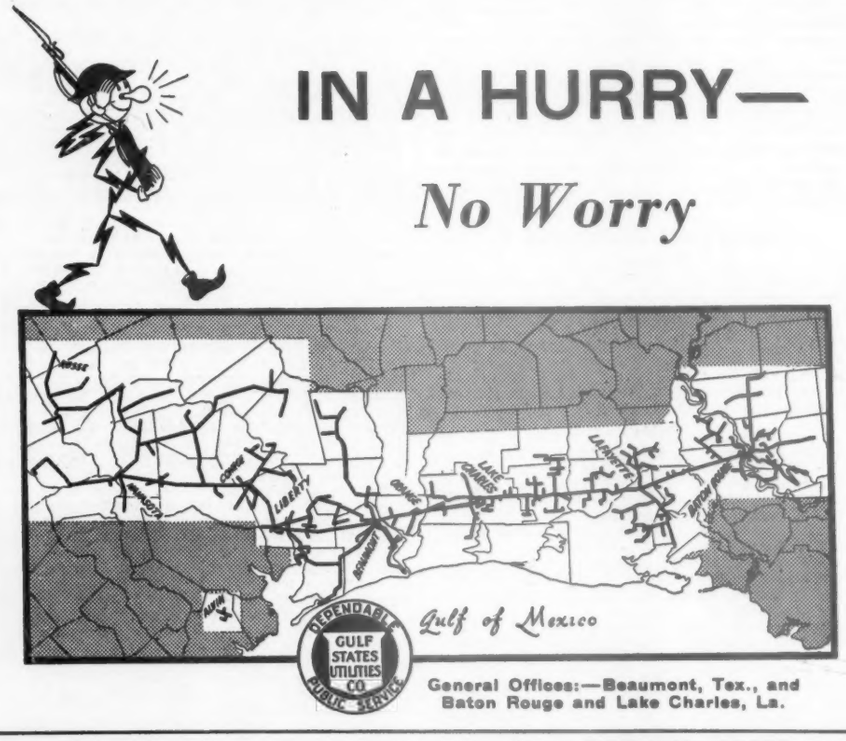
Ellis & Estes 1 I. N. Bridges, 467 ft. from S and E lines of Bridges land in E. T. Sur. 107, 3,500-ft. cable-tool test, drilling 600 ft.

A. P. Hienze 1 Whittington, NW SE Sec. 4, Blk. 2, T.&N.O. Sur., 3,800-ft. test, running 10-in. casing 1,005 ft.

Merry Bros. & Perrini 1 Greer, 1,283 ft. from S and 467 ft. from W lines Lot 2, H. Kegans Sur. 520, 4,000-ft. rotary test, waiting on cement 3,937 ft.

Comanche County: J. C. Hamer 2 Mary Smith, 600 ft.

(Continued on Page 99)



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Cut Bank Outpost Indicates Northeast Productive Trend

By T. R. INGRAM

DENVER, Colo., Nov. 24.—Further evidence of the opening of a new pool at the extreme north end of the Cut Bank field and south of North Cut Bank was given the past week in the completion of Glacier Production 4 Rigney, SW SW NW 2-35n-6w, which swabbed 80 bbl. first 8 hours from the Cut Bank sand at 2,937-3,001 ft. It was swabbing 5 bbl. an hour at the end of the period. It was still in sand when drilling stopped.

While not a discovery, it checks in favorably with other wells in the vicinity in indicating an important development. It is a north offset to A. B. Cobb-Texas 1 Mueller, completed in September for 473 bbl. natural at 3,009 ft., and a southeast offset to A. B. Cobb 1 Jeffries-Stufft, completed last month for 150 bbl. at 2,920 ft., this well being the outpost on the west. A mile to the northeast, Texas 1 Stufft was plugged and abandoned at 2,975 ft. as a dry hole. Last named was drilled in 1937 and at the time was considered the probable limits of Cut Bank in that direction.

However, in January 1940, Glacier Production had an 80,000,000-cu. ft. gas well in 2 Rigney, nearly a mile to the west and north of the dry hole, and ½ mile north of 4 Rigney. Drilling in this area the past few years has centered largely in trying to locate the trend which apparently runs northeast-southwest on which several good Sunburst sand wells have been completed. The most important of these was Santa Rita 1 Lander, 3 miles to the southwest of 4 Rigney, a Sunburst sand well completed in 1936, which holds the record for the field, having made as high as 2,000 bbl. a day.

Work Started on Test Near Kit Carson, Colorado

A wildcat in eastern Colorado which will be watched with unusual interest and about which many rumors have been circulating in recent months got under way the past week and was followed by an official announcement by O. E. Torrey, of Hutchinson, Kans., who is drilling the test. Heretofore, it has been carried under the name of Elmer E. Whitson. It will be known as O. E. Torrey 1 Whitson, and is located in C NW SE 12-13s-49w, ½ mile north of the Gulf 1 Union Pacific-Larson, which was drilled into pre-Cambrian rock at 6,369 ft. and abandoned in 1938. The last-named well had a show of oil in Marmaton sand at 4,808 ft. and this sand, in the Lower Pennsylvanian, is the objective of the present test, which will be drilled with rotary by the Pulse Drilling Co. of Hutchinson, Kans. Jack Paddelford, of Wichita, Kans., will be the consulting geologist on the test.

The Gulf well was generally accepted as a discovery at the time, but upon backing up to test the sand the oil was not recovered in appreciable quantities. A block of 30,000 acres was assembled by Holloway Brothers and Judge Martinson of Kit Carson following the retirement of the Gulf from that area. Purchasers of acreage in the block include the Bay Petroleum Corp. of Denver, the Superior Oil Co. of California, Robert E. Steele of Colorado Springs, and the Pulse Drilling Co.

Wildcat Started on North Spring Creek Dome, Wyoming

Another important wildcat starting this week is on the North Spring Creek dome, Park County, Wyoming, one of two structural highs on the Spring Creek anticline. The south dome was tested in 1930 and yielded 115 bbl. daily in the Tensleep, topped at 3,810 ft., and 185 bbl. in the Amsden. The test on the north high will be drilled as Kirk Oil Co. 1 Coe, located 3 miles north and west of the old well and is about 700 ft. structurally higher.

SUMMARY OF COMPLETIONS

Colorado

	No.	Bbl.	Footage
Dry holes: Wildcats	1		1,522

Wyoming

	No.	Bbl.	Footage
Oil wells: Fields	5	564	14,464

Montana

	No.	Bbl.	Footage
Oil wells: Fields	1	160	3,001
Gas wells: Fields	4	*17	3,857
Dry holes: Wildcats	2		5,517
Total	7		12,375

*Million cu. ft.

COLORADO COMPLETION

Alamo district, Huerfano County: S. W. Pressey 3 Alamo, SE SW NW 10-27s-68w, T.D. 1,522 ft., top of Dakota 1,510 ft., water rose 500 ft., plugged and abandoned.

COLORADO DRILLING REPORT

Archuleta County: Navajo Oil Co. 1 Brooks, NE NE NW 2-32n-2e, spudded in 12¼-in. hole, cable tools, to go to Dakota at around 1,100 ft., S.D. to complete rigging.

Cheyenne County: O. E. Terry 1 Elmer E. Whitson, C NW SE 12-13s-49w, rigged and ready to spud. Formerly carried as Whitson 1 Christian. (See lead.)

Huerfano County: Rheyn & Tomkins 1 Two Pines, SE SE 31-28s-69w, T.D. 1,500 ft., waiting on casing.

Kiowa County: Stanolind 1 Snell, C SW SW 7-20s-41w, drilling 1,300 ft., cmtd. 10¾-in. 1,218 ft.

La Plata County: E. B. Klem 1 Olbert, NW SW 9-35n-12w, T.D. 4,290 ft., fishing tools.

Nick Splatter 1-X Bryce, C SW SW 31-33n-9w, T.D. 4,450 ft., drilling by tools at 4,150 ft.

Las Animas County: Barney Oil 1 Dutto-Marchisio, NW NW 32-33s-62w, T.D. 1,610 ft., waiting on fishing tools.

Logan County: Mutual Oil 1 State, C SW SW 32-7n-51w, T.D. 4,840 ft., P.B. to sand at 4,480-96 ft., bailing and testing, probably will abandon.

Moffat County: Texas 13 Knowlton, NW NW NW 10-4n-91w, T.D. 4,687 ft., plugged back into 6⅝-in. at 4,599 ft., will perforate and test in Sundance.

Privett & Spangler 1 Stillings, NE SE SE 12-5n-96w, drilling 2,050 ft. in shale.

Great Divide Petroleum 1 Wyatt, NW NW SE 6-9n-92w, drilling 2,000 ft.

C. R. Privett 1 Sutton, NE NE SW 1-5n-96w, T.D. 2,420 ft., straightening hole at 2,346 ft.

Mountain Fuel Supply 10 Wilson, NW SW NW 23-12n-100w, location.

Stanolind 19-M Parkinson, NW SW NE 22-4n-92, T.D. 3,540 ft., testing.

Stanolind 11-X Parkinson, CWL NE SE 22-4n-92w, coring 3,240 ft.

Rio Blanco County: Texas-California 8 Unit, NW SE NW 26-3n-9w, drilling 4,400 ft.

United Oil Producers 1 Hill, Lot 13, 6-1n-101w, S.D. 1,300 ft.

Desert Oil Co. 1 Rector, Lot 6, 35-2n-102w, spudded.

United Producers 2 Hill, CEL Lot 13, 6-1n-101w, S.D. 700 ft.

Buford Oil Co. 1 Government, C SW SW 16-1n-91w, T.D. 4,527 ft., running tubing with packer to acidize and test.

Routt County: Elk River Co. 1 Fred N. May, C SE SE 34-8n-86w, drilling 450 ft.

WYOMING COMPLETIONS

La Barge field, Sublette County: Marvel Oil 2 Government, C NE SE 28-27n-113w, T.D. 1,231 ft., est. 4 bbl. a day from sand in Wasatch.

Texas Co. 2-I Government, SE NW SW 27-27n-113w, T.D. 1,065 ft., P.B. to 1,055 ft., flowing 85 bbl. a day.

Lost Soldier field, Sweetwater County: Sinclair-Wyoming 102 Lost Soldier, SE SE SE 3-26n-90w, T.D. 4,230 ft., top Tensleep 3,968 ft., 7-in. 3,960 ft., flowed 210 bbl. in 18 hours.

Mahoney field, Carbon County: Sinclair-Wyoming 5-F Mahoney, C NE NW 34-26n-88w, T.D. 4,536 ft., top Tensleep 4,346 ft., 7-in. 4,344 ft., 25 bbl. a day after a shot.

Oregon Basin field, Park County: Yale Petroleum 2-B Frisby, NE NE SE 32-52n-100w, T.D. 3,418 ft., top Embar 3,368 ft., pumped 240 bbl. a day after acidizing with 500 gal.

WYOMING DRILLING REPORT

Big Horn County: Carl Merz 1 Otto Menger, NE NE SE 22-49n-91w, cemented 8¼-in. 86 ft., first report, Bonanza district.

Carbon County: Continental Oil 1 Frank M. Johnson, SE SE SW 1-24n-88w, drilling 3,530 ft. in sandy lime, top Sundance 3,348 ft.

Sinclair-Wyoming 27-A Wertz, CSL NW SW 6-26n-89w, drilling 3,759 ft., top Frontier 2,510 ft.

Sinclair-Wyoming 26-A Wertz, NW SE SE 1-26n-90w (Sweetwater County), drilling 5,240 ft., top Sundance 4,183 ft.

Sinclair-Wyoming 1 Mary Carter, NE SE SE 31-25n-88w, drilling 3,425 ft., top Dakota (cor.) 2,835 ft.

Glen Swartout 3 Union Pacific, NE NE SE 21-22n-78w, T.D. 942 ft., preparing to make formation shutoff at 870 ft. and test.

Sinclair-Wyoming 25-A Wertz, NW SE SW 6-26n-89w, drilling 5,380 ft., top Sundance 4,285 ft.

Sinclair-Wyoming 25-C East Ferris, SE SE NW 25-26n-87w, T.D. 3,994 ft., set whipstock at 3,301 ft.

Superior Oil 1 Brimmer, CWL NW NE 32-27n-89w, rigging up.

Ohio Oil 2 Brimmer, SE NW NE 32-27n-89w, T.D. 1,620 ft., top Shannon sand 1,511 ft., D.S. test showed 1,480,000 cu. ft., running 5½-in.

Sinclair-Wyoming 3-A Mahoney, C NW NE 34-26n-88w, T.D. 524 ft., cemented 13⅜-in. 415 ft.

Fremont County: Kirk Oil 6 Tribal, CNL NW SW 23-6n-2w, T.D. 1,632 ft., testing in Embar.

Indian Oil 4 Tribal, SW NW NW 23-6n-2w, cemented 12½-in. at 56 ft.

Superior Oil Co. 1 Tribal, SW SE SW 15-3n-1w, drilling 420 ft.

Continental 4 Shoshone Indian, CWL SE NE 1-6n-3w, drilling 230 ft., 10-in. at 39 ft.

Natrona County: Casper Creek Oil 1 State, SW SW NW 36-36n-81w, T.D. 2,732 ft. in sand, top 2,717 ft.

Iba Dev. Co. 1, C NE SE 25-32n-82w, drilling 1,825 ft.

General Petroleum 57-16-S, NW SW NE 16-35n-77w, Shannon sand 4,631-61 ft., installing pump.

K. S. Albert 1 Young, NE SE 25-32n-82w, T.D. 1,630 ft., cemented 5⅛-in. 1,590 ft., show oil.

General Petroleum 3-21-G, NW SW NW 21-35n-77w, rigging.

Niobrara County: J. L. Berggren 1 fee, SE NW 23-35n-63w, drilling 2,780 ft.

Cow Gulch Oil 1 Nelson, C SE SW 19-35n-65w, cemented 7-in. 5,272 ft., will perf. and test upper bench basal Sundance at 5,085-5,119 ft.

Park County: Husky Refining 4-A Rosseau, NW SE SW 33-51n-100w, T.D. 3,702 ft., 8⅝-in. 3,676 ft., testing, swabbed and flowed 825 bbl. in 24 hr., preparing to acidize.

Stanolind 11-X Rosenberg, SE NE NE 26-58n-98w, T.D. 3,146 ft., top Embar 2,997 ft., Tensleep 3,050 ft., swabbed 6 bbl. per hr., installing pump.

MacKinnie Oil & Drilling 1 Northern Pacific, CNL NW NW 5-57n-99w, S.D. 2,460 ft. for orders.

Enalpac O. & G. 1 Custer, NE NE SW 32-52n-100w, T.D. 3,465 ft., cemented 5½-in. 3,299 ft., flowed 400 bbl. after acidizing, testing.

Yale Petroleum 2-A Atherly, SW SW NW 33-51n-100w, drilling 2,920 ft., top red beds 2,620 ft. (formerly 2-A Mattie).

Yale Petroleum 3-A Frisby, NE SW NE 32-52n-100w, location.

Continental 2 Northern Pacific-2, NW SW NE 23-58n-98w, T.D. 3,400 ft., top Tensleep 3,385 ft., running 7-in.

Yale Oil Corp. 1 Government, NW SE SW 9-57n-98w, drilling 1,525 ft., 8⅝-in. at 520 ft.

Continental 5 Northern Pacific-1, NW SE SE 23-58n-98w, rig, waiting on equipment.

Kirk Oil Co. 1 W. R. Coe, NE NW SE 27-50n-102w, moving in rotary, contract to Manning & Martin, Inc., test to Embar-Tensleep at 3,400 ft., first report, North Spring Creek dome.

Sublette County: Texas 2-J Government, NE SW SW 27-27n-113w, spudded, first report, La Barge field.

North La Barge Oil Co. 3 Government, NW NE NE 17-27n-113w, drilling 1,991 ft., first report.

Sweetwater County: Sinclair-Wyoming 8 Hughes, SW SW SW 2-26n-90w, T.D. 3,470 ft., reaming, top Alcova lime 2,925 ft.

Vermilion Oil 1 Government, SW NE NE 6-21n-99w, T.D. 2,280 ft., fishing.

Sinclair-Wyoming 104 Lost Soldier, C SW NW 11-26n-90w, derrick, first report.

Weston County: Federal Oil No. 11, NW SE SE 15-46n-64w, drilling 985 ft. shale, Wall Creek 965-78 ft.

MONTANA COMPLETIONS

Bowdoin field, Phillips County: Montana-Dakota Utilities 633 Kohnlein, C Lot 2, 30-32n-34e, T.D. 1,075 ft., Bowdoin sand 795-855 ft., Phillips sand 955-1,075 ft., 5½-in. 786 ft., 4½-in. liner 770-1,075 ft., 439,000 cu. ft. gas, 225 lb. R.P.

Box Elder field, Hill County: Montana-Dakota Utilities 1 fee, NW NW NW 24-32n-17e, Eagle sand 1,264-70 ft., 15,000,000 cu. ft. gas, 399 lb. R.P.

Cedar Creek field, Fallon County: Mondakota Dev. Co. No. 3, NE NE NE 36-5n-60e, sand 612-700 ft., 7-in. 610 ft., 4½-in. liner on bottom, 290,000 cu. ft. gas.

Cut Bank field, Glacier County: Glacier Production 4 Rigney, SW SW NW 2-35n-6w, T.D. 3,001 ft., still in sand, 7-in. 2,948 ft., Sunburst 2,894-2,918 ft., dry, Cut Bank 2,937-3,001 ft., main pay 2,976-3,001 ft., swabbed 80 bbl. first 8 hr. and swabbing 5 bbl. an hour at end of period.

Devon field, Toole County: Frank P. Walsh 1 Dempter, C NE SW 20-33n-2e, T.D. 812 ft., 4½-in. 791 ft., 1,000,000 cu. ft. gas, 115 lb. pressure.

Vaughn district, Cascade County: Bushford Pet. Synd. 1 Shannon-Roberts, C SW NE 12-20n-1e, T.D. 3,390 ft., plugged and abandoned.

West Sunburst district, Toole County: Montana-Dakota Utilities 1 Reicker, C NW SE 11-36n-3w, T.D. 2,217 ft., dry and abandoned, top Sunburst 1,890 ft.

MONTANA DRILLING REPORT

Blaine County: Independent Natural Gas 1011 Miller, SE SE SE 8-31n-19e, drilling 1,100 ft., first report.

Carbon County: R. C. Tarrant 2 McKay, C SE NW 4-6s-18e, drilling 3,960 ft. in sandy shale, top Chugwater 3,060 ft.

Fallon County: Carter 1 Northern Pacific, C SE SW 19-4n-62e, T.D. 9,678 ft. in schist at 9,654 ft. cemented 7-in. at 8,822 ft., test through perf. at 8,400-

8,644 ft., showed water, recementing with 300 sacks, will perf. at 6,800-8,300 ft. and test.

Garfield County: H. H. Schwartz, Jr., No. 1, SW SW NW 26-15n-30e, drilling 550 ft. shale, 8¼-in. 60 ft., first report, semiwildcat Cat Creek field.

Glacier County: William Hanlon 3 Tribal-196, SW NW NE 30-32n-5w, rig.

Texas 4-B Government, C SW SW 17-32n-5w, spudded.

Texas-Miller 1 Morgan, 660 ft. S NE cor. 32-33n-5w, spudded.

Lawler-Hoer 2 Clarkson, SW SW SW 9-33n-5w, spudded.

R. C. Tarrant 1 Lenoir, SW SW NW 17-31n-5w, ready to spud.

Consolidated Gas 3 Tribal-172, SW NW NW 18-32n-5w, drilling 650 ft., top Colorado 462 ft., 10¾-in. 511 ft.

Santa Rita 15 Tribal, SW SE NE 3-35n-6w, spudded.

A. B. Cobb 2 Tribal-206, SW NW SW 19-32n-5w, cemented 10¾-in. 647 ft., top Colorado 615 ft.

Cobb, Jeffries, Texas 1 fee, NE NE SE 3-35n-6w, drilling 1,100 ft., to Colorado 640 ft., 10¾-in. 400 ft.

Hill County: Montana Gas 2 fee, NE NE NW 24-32n-17e, drilling 200 ft., first report, Box Elder field.

Toole County: Montana-Dakota Utilities 327 Donovan, C NW SE 31-34n-1w, drilling 925 ft., 10-in. 220 ft.

Hat Oil 1 Mitchell, C NE SW 24-37n-3w, standing 1,315 ft.

E. O. Reickhoff 1 Reickhoff, C NE SW 3-32n-2w, standing 60 ft.

J. H. Agen 18 Goeddertz, CSL NE SW 23-35n-3w, rigging.

Harmon & Morton 1 Sohn, SW SW NE 23-35n-3w, spudded to 60 ft. and S.D.

Nepstad Oil 3 Hugi, C SE NW 11-35n-3w, rig.

Casper T. Oien 12 Engermoen, NE SE NW 14-35n-2w, T.D. 1,570 ft., 170 ft. oil in hole, standing.

A. A. Oil Co. 1 Fey, SW SE SE 32-37n-2e, standing 1,010 ft.

Nepstad-Montgomery-Fargher 4 Haugen-2, CSL SW SW 2-35n-3w, T.D. 1,600 ft., fishing.

Dakota-Montana Oil 26 Government, CNL NE NW 19-35n-1w, T.D. 550 ft., fishing, 8¼-in. 180 ft.

Gordon Plotke 4 Ward, SE SW SW 28-35n-3w, T.D. 1,719 ft., 100 ft. fluid in hole, standing.

Superior Pet. 4-A Government, C SE NW 24-35n-3w, drilling 1,664 ft. in Madison, no breaks in lime.

L. J. Yealy 17 Shaw, NE NE SW 35-36n-2w, location.

C. Leonard Smith 1 Lewis, NE SW NW 34-33n-2e, Devon district, standing 750 ft., 4½-in. cemented.

Rimrock Oil 8 Schmidt, SE SE NW 29-35n-3w, standing 180 ft.

J. H. Agen 5 Goeddertz, CSL SW SE 16-35n-3w, drilling 1,010 ft., 8¼-in. 965 ft., first report.

Big West Oil 1 Dahiquist, C NW 6-34n-4w, drilling 330 ft., 10-in. 226 ft., first report.

Prevol & Shay 10 Waite, NE SE NE 24-35n-2w, drilling 1,060 ft., 8¼-in. 140 ft., first report.

NORTHWEST NEW MEXICO DRILLING REPORT

McKinley County: Petroleum Products 18 State, SE NE SW 36-18n-9w, T.D. 1,665 ft., stdg., casing set on top Hospah sand, first report, Hospah field.

Ambrosia Investors 1 Santa Fe, NE NE SW 3-14n-10w, drilling 510 ft.

San Juan County: Southern Union Production 3-B Government, C NW SE 20-29n-11w, drilling 1,005 ft.

Torrance County: Cardinal Oil 1 State, SE SW 3-8n-14e, T.D. 1,140 ft., underreaming 8¼-in. from 1,022 ft. to shut off water.

J. P. Stewart 1 Lamon ranch, C SW NE 3-3n-12e, T.D. 765 ft., sidetracking bit.

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Demand For Gas Spurs West Virginia Drilling Activity

By STAFF CORRESPONDENT

PITTSBURGH, Pa., Nov. 24.—No unusually large wells were brought in during the past week although all sections continue active. An index of that activity was the filing of 41 new locations in West Virginia alone, of which 19 are in the Oriskany fields in Kanawha and Jackson counties.

None of the deep tests in Southwest Pennsylvania reached important markers during the week. On Chestnut Ridge, Peoples Natural Gas Co. is drilling at 7,529 ft. in 4 Piedmont Coal Co. and from indications may be the deepest in the area as the Onondaga lime has not been topped. It is in South Union Township, Fayette County. South of this, Greensboro Gas Co. is drilling at 6,897 ft. in the test on the Barton heirs and in black shale.

Here, New Penn Development Co., William E. Snee et al are drilling at 6,691 ft. in 1 Kirby and the hole caving. The Brown shale was topped at 6,600 ft. These operators are drilling 1 Carothers at 7,076 ft. after cementing back from 7,092 ft. and at this depth will run 7-in. casing. Their 4 Heyn (Summit Hotel) is drilling at 3,216 ft.

SUMMARY OF COMPLETIONS

Southwest Pennsylvania

	No.	Bbl.	Footage
Gas wells	8	*1.3	19,467
Dry holes	1	.....	1,650
Total	9	.....	21,117

West Virginia

	No.	Bbl.	Footage
Oil wells	2	28	3,628
Gas wells: Oriskany	4	*15.3	20,727
Others	7	*3.4	15,302
Dry holes	2	.....	3,118
Total	15	.....	39,515

*Million cu. ft.

Maryland Test Has Fishing Job

In Maryland, New Penn Development Co. et al lost the tools at 8,163 ft. in the test on the Schartzer (Humberson) farm on the Accident dome in Garrett County and have whipped off the line. As soon as the band wheel has been repaired, fishing will resume.

In Richhill Township, Greene County, Natural Gas Co. of West Virginia is drilling at 4,787 ft. in the test on the Andrew Workman farm on the Washington anticline.

Armstrong County

Kiskiminitas Township: Shaw & Townsend 1 Heyart, 46,000 cu. ft. gas, Bradford sand, T.D. 3,450 ft.

Kittanning Township: T. W. Phillips 1 W. W. Wright, 313,000 cu. ft. gas, Fifth sand, T.D. 2,045 ft.

North Buffalo Township: Saxonburg Light & Heat 1 J. Johnson, 25,000 cu. ft. gas, Hundred-Foot, Speechley, and Sheffield sands, T.D. 2,710 ft.

Plum Creek Township: Shelocta Oil & Gas 1 Clark Cribbs, 192,000 cu. ft. gas, Murraysville, T.D. 1,809 ft.

South Buffalo Township: T. W. Phillips 2 F. Beale, dry, through Murraysville, T.D. 1,650 ft.

Clarion County

Porter Township: Owens-Illinois Glass 1 G. H. Miller, 38,000 cu. ft. gas, T.D. 2,750 ft.

Fayette County

Nicholson Township: Greensboro Gas 1 Hannah Johnson, 140,000 cu. ft. gas, Fifth sand, T.D. 2,413 ft.

Greene County

Wayne Township: Peoples Natural 2 S. H. Eddy, 58,000 cu. ft. gas, Bayard stray sand, T.D. 3,405 ft.

Washington County

North Strabane Township: Carnegie Natural 2 Cleli Gilkerson, 520,000 cu. ft. gas, Big Dunkard sand 865 ft., gas 865 ft., T.D. 885 ft.

West Virginia Gas Operations Increased

Activity in gas areas in West Virginia continues at a high rate due to the demand and a price which yields an adequate return. However, in the possible oil areas, except for major companies, work is mostly reconditioning and cleaning out as smaller operators are still loath to take the hazards at the present fixed price level. A great percentage of new oil production in past months, and it has been little, has been the result of drilling in the expectation of gas and striking small oil lenses. Little wildcatting is being done except on the edges of the Oriskany gas pools.

Calhoun County

Sherman district: Godfrey L. Cabot, Inc., 12 Allen Hardman, 231,000 cu. ft. gas, Big lime 1,562-1,665 ft., Big Injun 1,665-1,723 ft., gas 1,707-1,723 ft., T.D. 1,769 ft.

Hope Natural 8570 John W. Frame, 15 bbl., Maxton sand, T.D. 1,652 ft.

McCall Drilling 2 Smith heirs, 250,000 cu. ft. gas, Injun sand, T.D. 2,160 ft.

F. A. Richards 1 Lillie B. Fling, 246,000 cu. ft. gas, Injun, T.D. 1,932 ft.

Washington district: A. E. Weaver 1 Peter McCune, 13 bbl., Big lime 1,900-90 ft., Injun 1,990-2,064 ft., gas and oil 2,032-38 ft., T.D. 2,076 ft.

Clay County

Buffalo district: Pittsburgh & West Virginia 7810 F. L. Hall, 300,000 cu. ft. gas, Blue Monday sand, T.D. 2,126 ft.

Putnam County

Curry district: Summit Gas 1 Edna L. Wood, 146,000 cu. ft. gas after shot, Big lime 1,461-1,615 ft., Injun 1,645-1,700 ft., Berea 2,138-64 ft., T.D. 2,173 ft.

Monickle Gas 2 Stewart Lake, Inc., 84,000 cu. ft. gas, Big lime 1,717-1,891 ft., Big Injun 1,920-69 ft., Berea 2,415-42 ft., R.P. 590 lb., T.D. 2,463 ft.

Ritchie County

Murphy district: Patterson & Pope 11 Harry W. Patterson, dry, through Injun sand, T.D. 1,758 ft.

Wetzel County

Proctor district: S. J. Brendel et al 1 William Hohman, 2,100,000 cu. ft. gas, Pittsburgh Coal 895 ft., Gordon sand 2,904-6 ft., T.D. 2,907 ft.

Wirt County

Newark district: G. L. Shimer 4 T. C. Exline, dry, through Berea, T.D. 1,360 ft.

ORISKANY GAS FIELDS

Jackson County

Ravenswood district: Everett Starcher et al 1 C. P. Hinzman, 3,230,000 cu. ft. gas, Corniferous lime 5,036 ft., Oriskany 5,152 ft., T.D. 5,204 ft., not shot.

United Gas 5037 J. W. Clem, 965,000 cu. ft. gas before shot, Corniferous lime 5,112 ft., Oriskany 5,219 ft., T.D. 5,264 ft.

Ripley district: United Fuel 5043 W. W. Shinn, 4,919,000 cu. ft. before shot, Corniferous lime 4,965 ft., Oriskany 5,066 ft., T.D. 5,089 ft.

DRILLING

Ravenswood district: Hope Natural Gas Co. 1 Rosa L. Boggess, top Corniferous lime 4,976 ft.

Ripley district: G. L. Cabot, Inc., 1 W. A. Lee, Corniferous lime 5,030 ft., Oriskany 5,133 ft., fishing tools.

Mullins Gas Co. 1 D. J. Rogers, Corniferous lime 4,856 ft.

United Carbon Co. 1 G. L. Cabot, Corniferous 5,010 ft., fishing bit and 11 joints, 5⅛-in. casing.

United Fuel Gas Co. 5042 J. H. Smith, Corniferous lime 5,015 ft., Oriskany 5,121 ft.

United Fuel Gas Co. 5044 J. B. Shinn, Corniferous lime 4,967 ft.

Kanawha County

Poca district: Godfrey L. Cabot, Inc., 23 Putnam Co., 6,245,000 cu. ft. gas before shot, Corniferous lime 5,072 ft., Oriskany 5,170 ft., T.D. 5,171 ft.

DRILLING

Elk district: Columbian Carbon Co. 1 E. T. Crawford, Corniferous lime 4,855 ft.

Poca district: Columbian Carbon 2 Samuel Taylor, Corniferous lime 4,916 ft., Oriskany 5,073 ft., gage 1,090,000 ft. at 5,078 ft.

G. L. Cabot, Inc., 11 J. L. McClean heirs, Corniferous lime 5,096 ft.

G. L. Cabot, Inc., M. M. Derrick, Corniferous lime 4,974 ft.

South Penn N. G. Co. 1 Clendenin-Robinson, Corniferous lime 4,961 ft.

South Penn N. G. 1 Marion Bostick, Corniferous lime 4,818 ft.

MISSISSIPPI AND SOUTHEAST

Pickens Outpost Believed To Open Deep Eutaw Sand

By R. MARNE SANFORD

JACKSON, Miss., Nov. 24.—The indicated 1⅛-mile southeast extension to the Pickens field of Madison County now appears to be a deep sand discovery in the Eutaw formation at the 4,825-ft. level. The test is Buzz Morgan 1 Whitworth, NW SW 4-11n-3e, just southeast of the shallow Pickens field.

The hole is bottomed at 5,663 ft. with tops reported as follows: Wilcox 1,217 ft., Midway 3,054 ft., Clayton 3,836 ft., Selma 3,905 ft., base of chalk 4,271 ft., Eutaw 4,785 ft., and Tuscaloosa at 5,454 ft. A sand was found from 4,824-90 ft. and saturation therein was found from 4,823-40 ft. The lower part of the sand section or from 4,840-90 ft. carried salt water. The operator cemented 7-in. casing at 4,918 ft., which will be perforated for a test of the zone when tubing can be obtained to run in the well. There is reportedly very little available acreage even within several miles of this wildcat.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Tinsley ...	3	2,177	15,444
Dry holes: Wildcats	1	.....	2,727
Total	4	.....	18,171

New Wildcats Started

There were four new locations for the week in Mississippi, three being in the Tinsley field and the other an exploratory wildcat in Sunflower County. It will be drilled by Ohio Oil Co. and located in SE NW 36-18n-5w. The site is on a block acquired by the company in 1932 after magnetometer work and later added to in 1937, 1939 and 1940 following extensive seismograph work.

Last week Tide Water Associated Oil finished a deep 10,808-ft. wildcat failure in Lawrence County. It was 1 Denkman Lumber Co., located in NE SW 5-5n-11e. Reports are now that the same company is contemplating another deep wildcat on the large block of acreage it holds in the area. Starting date was not mentioned.

New Salt Dome Found

A new Mississippi salt dome has apparently been found in Warren County. The Magnolia 1 Hall, once indicated low gravity discovery well, in deepening found salt at 3,845 ft. The caprock was encountered at 3,591 ft. with anhydrite at 3,760 ft. Good shows of oil were previously reported in the Wilcox zone and it will be plugged back to test this horizon. The wildcat is located in 39-17n-4e, some 30 miles southwest of the Tinsley field.

Alabama Deep Test Expected As Geophysical Work Ends

In Walker County, Alabama, Superior Oil Co. has finished its geophysical work in the Warrior basin and is contemplating a deep test within the coming few months. No definite location has been named, however, most of the work has been done in Township 13s-8w and the immediately surrounding area. Several leases on small tracts have been reportedly taken by independents for sale to Superior Oil Co. to fill out its large block in the area. Considerable seismograph work was done in the basin but it is not definitely known yet which formations reflected the shots, thus the picture is not wholly verified. Possibly, it is reported, from one to four test wells will be drilled to verify the seismograph picture.

MISSISSIPPI ACTIVE WILDCATS

Copiah County: Sun Oil 1 J. G. Ainsworth, N½ NW SE 17-9n-7e, top Vicksburg 1,229 ft., Moody 1,785 ft., Cockfield 1,815 ft., Cook Mountain 2,168 ft., Sparta 2,435 ft., Cane River 3,175 ft., Tallahatchie 3,491 ft., Meridian 3,743 ft., Wilcox 3,790 ft., Midway 7,158 ft., Chalk 8,004 ft., drilling 8,727 ft.

Issaquena County: John D. Gholson and Jess Bohan 1 Carrie M. Oden, NW SE 31-9n-6w, Tallahatchie 2,390 ft., Wilcox 2,727 ft., Midway 4,613 ft., drill pipe stuck at 5,190 ft.

Madison County: C. L. Morgan 1 Whitworth, NW SW 4-11n-3e, 2 mi. SE of Pickens field, top Wilcox 1,217 ft., Midway 3,054 ft., Clayton 3,836 ft., Selma 3,905 ft., base chalk 4,271 ft., Eutaw 4,785 ft., Tuscaloosa 5,454 ft., saturated sand 4,823-40 ft., 7-in. casing at 4,918 ft., preparing to run tubing and test.

Sunflower County: Ohio Oil Co. 1 fee,

(Continued on Page 101)

Texas Gulf Coast Fields

(Continued from Page 87)

recently completed to extend the field 1½ miles southwest, Phillips 1 Johnson was flowing at the rate of 6 bbl. of oil per hour through a ¼-in. bottom-hole choke and ⅛-in. choke on top while testing through perforated casing at 5,220-23 ft. It was necessary to recomplete the well higher in the section after it flowed 50 per cent oil and the balance salt water when tested through perforated casing at 5,224-28 ft.

In the discovery area, Moore & Ahern 2 Burdett extended production several hundred feet west when it flowed at the rate of 120 bbl. daily through a ⅛-in. choke. Production is from perforated casing at 5,206-09 ft., and at 5,212-16 ft. At the present time there are eight active operations in the field, and this is expected to be increased in the near future as many of the leases are scheduled to expire within the next few months. The field is divided into many ownerships and development already has proven an area of approximately 2½ miles in a north-south direction and approximately the same distance east and west.

Oyster Bayou Field Extended

Another extension was apparently assured the Oyster Bayou field, Chambers County, as Sun Oil Co. cemented 7-in. casing on bottom at 8,366 ft. in 6 Jackson. Gas sand was cored normal at 8,195-8,286 ft., and the main sand was cored at 8,286-8,353 ft. The well is located about 1,200 ft. west of 4 Jackson, and is scheduled to be drilled to 9,500 ft. before a production test is attempted.

TEXAS GULF COAST COMPLETIONS

Fields

Anahuac, Chambers County: Humble 63 Middleton, 515 bbl., ¼-in. choke, sand 7,097-7,190 ft., T.D. 7,227 ft.

Fig Ridge, Chambers County: Texas 3 Broussard, 810 bbl., ¼-in. choke, perf. casing 8,574-78 ft., T.D. 8,609 ft.

Hull, Liberty County: Gulf 109 Phoenix, 1,000,000 cu. ft. gas ¾-in. choke, sand 3,737-46 ft.

Lolita, Jackson County: Cox & Hamon 1 Gordon, 110 bbl., ⅛-in. choke, perf. casing 5,937-42 ft., T.D. 5,945 ft.

Magnolia 7 Four Way Ranch, 143 bbl., 9/64-in. choke, perf. casing 5,945-48 ft.

Lovells Lake, Jefferson County: Phillips 1 State, 74 bbl., 7/64-in. choke, perf. casing 7,792-96 ft., T.D. 7,875 ft.

Maurbro, Jackson County: Humble 4 Fred Robbins, 437 bbl., ¼-in. choke, sand 5,127-25 ft.

North LaWard, Jackson County: Moore & Ahern 2 Burdett, 120 bbl., ⅛-in. choke, perf. casing 5,206-09 ft., 5,212-16 ft., T.D. 5,236 ft.

Texana, Jackson County: Sinclair 1 Westhoff, top Discorbis 4,619 ft., Heterostegina 4,990 ft., round Marginulina 5,070 ft., flat Marginulina 5,080 ft., Textularia Warreni 7,684 ft., dry, T.D. 7,788 ft.

West Beaumont, Jefferson County: Stanolind 2 Kaufman, 80 bbl., ⅛-in. choke, T.D. 5,385 ft.

Withers, Wharton County: F. W. Michaux, 202 bbl., 5/32-in. choke, perf. casing 5,328-42 ft., T.D. 5,400 ft.

F. W. Michaux 61-A Pierce, 180 bbl., ⅛-in. choke, perf. casing 5,337-52 ft., T.D. 5,395 ft.

Texas 81-B Pierce, 52 bbl., ⅛-in. choke, perf. casing 5,541-48 ft., T.D. 5,549 ft.

West Central Texas Fields

(Continued from Page 96)

from N and 1,000 ft. from E lines Sec. 31, B.B.B. &C. Sur. A-76, 1,000-ft. cable-tool test, drilling 628 ft.

C. D. Lane 1 W. T. Hazzard, 3,889 ft. from NW and 1,806 ft. from NE lines Marmaduke Hatton Sur. A-424, 2,900-ft. cable-tool test, drilling 1,008 ft.

Eastland County: Stewart Oil 1 Shaeffer, 660 ft. from E and 1,980 ft. from S lines 394-ac. farm, Moses Allen Sur. 26, 3,500-ft. test, drilling 2,940 ft.

Miles & Francisco 1 J. P. Mitcham, 450 ft. from S and 750 ft. from W lines Sec. 3175, T.E.&L. Sur., 700-ft. cable-tool test, first report.

Hamilton County: Grady Wallace 1 J. H. Robertson, 4,750 ft. from NE and 6,400 ft. from SE lines J. Chew Sur., Pat. B-1635, A-164, 4,000-ft. cable-tool test, drilling 1,100 ft.

Haskell County: J. A. Worsham 1 McLennan, 440 ft. from S and W lines 370-ac. farm in S. C. Robertson Sur. 4, A-352, S.D. orders 3,506 ft.

Edward C. Lawson 1 C. C. Rose, 489 ft. from S and 440 ft. from E lines 392-ac. tract, J. McCass Sur. 57, A-95, 3,000-ft. cable-tool test, cleaning out, T.D. 2,985 ft.

Jones County: Butler & Horne Drilling Co. 1 G. W. Murfee, 660 ft. from N and W lines of SW cor. E. Dickinson Sur. 275, but in Jones Boston Sur. 276, 3,500-ft. cable-tool test, moving in material.

Petro-Producers Co. 1 George Walker, 330 ft. from S and W lines Sec. 46, T.&P. Sur., Blk. 16, 2,000-ft. cable-tool test, drilling 990 ft.

J. B. Cunningham 1 J. B. Freeman, 330 ft. from W and 2,000 ft. from S lines Alex. Glenn Sur., 2,800-ft. cable-tool test, drilling 1,375 ft.

W. L. Snoddy 1 Huddleston, 2,150 ft. from S and 467 ft. from W lines farm in E part Sec. 41, T.&P. Sur., Blk. 18, 3,000-ft. cable-tool test, drilling 2,785 ft.

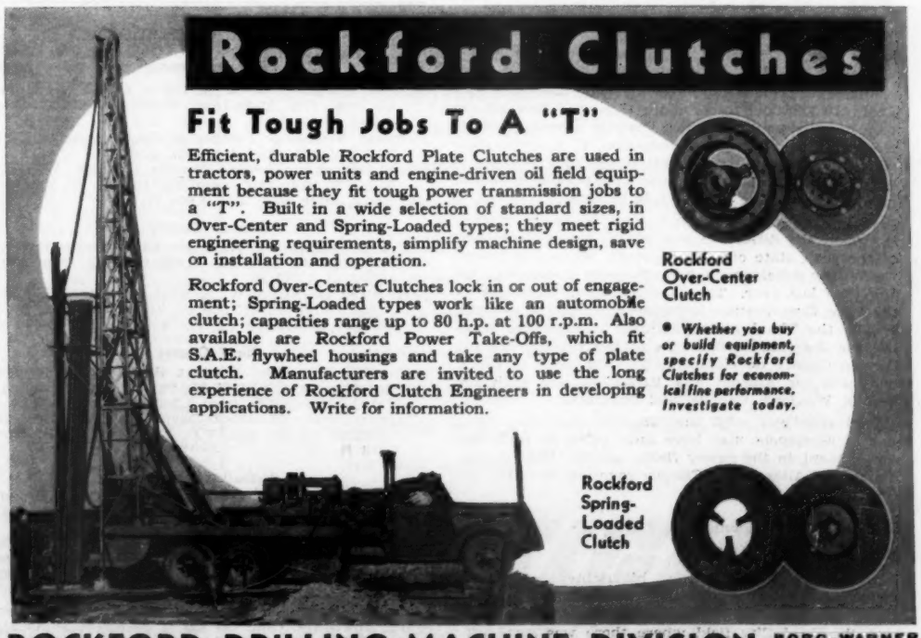
Ungren & Frazier 1 S. J. Peyton, 330 ft. from S and 1,070 ft. from E lines 100-ac. tract, M. Hale Sur. 251, drilling 2,152 ft.

Shackelford County: R. H. Roark 1-B Elliott, 660 ft. from S and E lines SW Sec. 9, L.A.L. Sur., 5,000-ft. cable-tool test, drilling 3,351 ft.

Owenwood Pool No. 3 1 W. H. Green, 220 ft. from S and W lines of W½ of SW Sec. 55, T.&P. Sur., Blk. 11, 1,200-ft. cable-tool test, first report.

Stonewall County: Forest Dev. Oil Corp. 2 C. E. Boyd, 990 ft. from N and 1,700 ft. from W lines Sec. 45, H.&T.C. Sur., Blk. D, 5,100-ft. rotary test, drilling 1,650 ft.

Taylor County: Butler & Horne 1 Merchant, 330 ft. from N and 2,687 ft. from W lines S½ Sec. 30, Blk. 16, T.&P. Sur., drilling 2,460 ft.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Reed City Offsets Decline In Other State Fields

By OTTO C. PRESSPRICH

SAGINAW, Mich., Nov. 24.—With the Reed City field showing no signs of a letdown after 6 months of intensive development, prospects are that Michigan crude-oil production this year will come within 3,000,000 bbl. of the 19,750,000 which flowed or was pumped last year from approximately 3,200 wells.

Oil & Gas Association of Michigan production figure for October, released last week, revealed output of 1,842,206 bbl., an increase of approximately 290,000 bbl. over September and the highest volume since March of 1940. The October daily average of 59,426 bbl. was an increase of 7,658 bbl. over September's 51,768 bbl., and was accounted for by a jump of 6,500 bbl. in the average from the Reed City-Osceola field, an increase of 1,200 bbl. a day in the Roscommon County average and of 1,100 bbl. in the Winterfield-Clare district.

Reed City production now is more than four times greater than that of any other field in the state, averaging 22,196 bbl. last month from 68 producing wells. While new proration limits will tend to keep down further increases, continuing completion of highly productive new wells should keep the average at least as high this month as it was last. New developments in the Winterfield sector placed that field in second place, above Freeman-Redding, also in Clare County, for this first time, even though Freeman-Redding output showed a moderate gain of 175 bbl. in its daily average output. The moderate decline continued in all fields in the southern part of the state.

Michigan production in 10 months this year was about 13,000,000 bbl., or more than was forecast before development began last June in Osceola County. November and December production, F. R. Frye, state oil engineer estimated, will bring Michigan again within striking distance of the 2,000,000-bbl. a month rate which was the general rule in 1939.

While the drilling permit total is below that of last year, the difference will not be great at the end of the year, state officials reported, because in recent weeks new development has proceeded faster than for any time last year. The pace continued last week as the state Conservation Department issued 19 permits, despite the Thanksgiving holiday, bringing the number for the year to 887. Six of the permits are for Osceola County development, four for tests in Clare, two each for Allegan and Missaukee, one each for Arenac, Wexford, Isabella, and Crawford.

Steel shortages with the resulting possibility of a lack of equipment may have some effect in retarding development in the newer fields, notably Roscommon, Hopkins of Allegan and Tuscola counties, Mr. Frye believes.

Shallow Well at Mount Pleasant Makes 600 Bbl.

Last week's activities were highlighted by a completion in the Mount Pleasant pool, Chippewa Township, Isabella County, and a new surge of production from the Reed City field where there was some offsetting news in completion as a dry hole of a test in adjoining Lake County's Pinora Township.

One of the best wells completed to date in the Reed City sector was among the 18 completions of the week. It was a gusher gaged at 8,900 bbl. a day in Section 20 of Lincoln Township, completed as a cooperative venture involving three of the principal companies operating in the field. Six other wells were brought in, their production ranging from 1,320 to 3,360 bbl. a day, some of them being acid-treated.

The Chippewa-Isabella test, which brightens outlook for that area is Michigan Devonian Petroleum Co. 1 Davis et al, in Section 3, acid-treated at 3,057 ft. (See below.)

Aside from four gas wells, none especially good, there were five dry holes in the week's completion list, including a Newaygo County wildcat and an Adams-Arenac test which got a show of oil at 4,489 ft. and was plugged back to 2,908 ft. for unsuccessful testing.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Allegan County	1	10	1,604
Isabella County	1	600	3,057
Osceola County	7	21,608	25,127
Gas wells: Arenac County	1	*0.4	1,313
Clare County	2	*2.0	2,673
Isabella County	1	*0.4	1,374
Dry holes: Allegan County	1	.....	1,580
Arenac County	1	.....	4,489
Lake County	1	.....	3,666
Montcalm County	1	.....	1,289
Newaygo County	1	.....	2,850
Total	18	.....	49,022

*Million cu. ft.

MICHIGAN CRUDE-OIL RUNS

(Daily Average for October 1941)

Pool—	Wells	Runs
Porter-Yost	337	4,008
Greendale-Chippewa	176	1,168
Sherman-Isabella	61	677
Vernon-Leaton-Denver	73	672
Wise-Isabella	61	844
Reed City-Osceola	68	22,196
Grant-Clare	2	0
Freeman-Redding	144	4,501
Winterfield-Clare	5	5,407
Beaverton-Grout	25	453
Buckeye, North and South	288	1,675
Edenville	26	158
Bentley	35	329
Secord-Gladwin	2	0
Ogemaw County	223	1,056
Adams-Arenac	31	3,081
Clayton-Arenac	50	551
Monitor-Bay County	7	933
Roscommon County	3	1,814
Saginaw City	51	39
Birch Run	25	30
Dundee-Monroe	18	221
Crystal-Wyman	34	282
Amble-Montcalm	3	47
Muskegon	56	37
Holland-Zeeland	3	10
Allegan, all pools	552	3,178
Walker-Wyo-Tallmadge	474	3,222
Van Buren, all pools	283	2,818
Barry County	1	19
Total	3,117	59,426

MICHIGAN COMPLETIONS

Allegan County

Manlius Township: M. & S. Oil & Gas 1 Gretzinger, SE NW NW 28-3n-15w, wildcat, location abandoned.

Monterey Township: Prather & Gooch 1 Aldrich, SW NW SW 6-3n-13w, dry, T.D. 1,580 ft.

Salem Township: Thomas Fensom 1 Smith, W½ E½ W½ SE 10-4n-13w, pumping 10 bbl. oil and salt water, after acid, T.D. 1,604 ft.

Arenac County

Adams Township: Don Rayburn A-1 Ostrosky, NW NE SE 22-19n-3e, dry, T.D. 2,908 ft., P.B. from show of oil at 4,489 ft.

Deep River Township: W. E. Ross 1 Goodroe (comm.), C SW 17-19n-4e, 415,000 cu. ft. natural gas, blowing out to 275,000 cu. ft., wildcat, T.D. 1,528 ft.

Clare County

Winterfield Township: Taggart Bros. Co. 38 Schuett-State-Marion, C SW 28-20n-6w, 726,000 cu. ft. gas, T.D. 1,353 ft., P.B. from 1,360 ft.

Taggart Bros. 80 Abbott-Davidson, C SE Sec. 28, 1,310,000 cu. ft. gas, T.D. 1,311½ ft., P.B. from 1,313 ft.

Isabella County

Broomfield Township: L. & S. Drilling Co. 2 Brown, NW SW NE 24-14n-6w, 430,000 cu. ft. gas, T.D. 1,374 ft.

Chippewa Township: Michigan Devonian Petroleum Co. 1 Davis-McNeil et al, NW NW NW 3-14n-3w, flowing 600 bbl. a day, after acid, T.D. 3,057 ft.

Lake County

Pinora Township: Ohio Oil Co. 1 Pieser et al, C S½ NW SW 6-18n-11w, wildcat, dry, T.D. 3,666 ft.

Montcalm County

Belvidere Township: Belvidere Oil Co. 1 Pitts, SW NE SW 18-12n-7w, dry, T.D. 1,287 ft.

Newaygo County

Dayton Township: Edward B. Strom, tr., 1 Messner, SW SW NE 10-13n-14w, wildcat, dry, T.D. 2,850 ft.

Osceola County

Lincoln Township: Pure Oil Co. B-2 Richards, C N½ SE SW 19-18n-10w, 3,360 bbl., natural, T.D. 3,598 ft.

Gordon Oil, Bolger Oil and Ohio Oil Co.'s B-1 Meida, C S½ NE SE Sec. 20, 8,900 bbl., natural, T.D. 3,548 ft.

Pure Oil Co. 1 Mitchell, C N½ NW NW Sec. 30, 1,320 bbl. a day, pinched after acid, T.D. 3,638 ft.

Charles W. Teater 3 Baderschneider, CN½ SE NW Sec. 30, 2,400 bbl. a day after acid, T.D. 3,605 ft.

Ohio Oil Co. 3 Fatum, C N½ SE SE Sec. 30, 2,460 bbl., natural, T.D. 3,539 ft.

Ohio Oil Co. 1 Goch-Hewitt (comm.), C N½ SW NW Sec. 32, 1,560 bbl., natural, T.D. 3,605 ft.

Pure Oil Co. 2 Reber, C N½ NE NW Sec. 32, 1,608 bbl. after acid, T.D. 3,594 ft.

Ohio Fields

(Continued from Page 79)

Bach, Sec. 21, 50,000 cu. ft. gas, shot, Berea, T.D. 1,744 ft.

Noble County

Elk Township: J. T. Gailey 9 Jacob Ullman, Sec. 21, dry, Oriskany 4,652-4,712 ft., T.D. 4,728 ft. (previously reported; will not be deepened).

Jefferson Township: Hayes Bros. 1 Harley Lake, E½ Sec. 24, dry, no show, Germantown sand, T.D. 1,075 ft.

Olive Township: William Patten 4 C. I. McKee, Sec. 13, 50,000 cu. ft. gas, Berea (Gordon 1,959-64 ft. dry, T.D. 1,980 ft., P.B. to 1,629 ft.).

Perry County

Monroe Township: Hermey Bros. 25 David C. Hermey, NW Sec. 34, 7 bbl., Berea, T.D. 1,028 ft.

Thorn Township: Palm Oil Corp., Inc., et al 1 Lola Cooper, SW Sec. 13, dry, Clinton sand, T.D. 2,750 ft.

Bert Davis et al 1 H. L. Yaney, Sec. 14, 940,000 cu. ft. gas, show oil, Clinton 2,769-2,800 ft.; (may shoot later).

Summit County

Green Township: H. C. Bishop 1 E. Frank, Sec. 15 2,300,000 cu. ft. gas, Clinton, T.D. 4,330 ft.

Vinton County

Eagle Township: Henderson Oil 5 W. F. Miller, Sec. 24, dry, Berea, T.D. 438 ft.

EASTERN KENTUCKY

ASHLAND, Ky., Nov. 24.—Two oil wells and two gas wells were reported completed in eastern Kentucky last week, and at the same time seven new locations were made. These activities tend to keep the line of general operations pointing upward in this part of the state.

Lee County

R. T. Barnes 8 J. F. Raines, Billies Fork in the Big Sinking district, flowed 8 bbl. of oil daily.

South Penn Oil Co. 5 Flahaven Land Co., Tract 500a, on Big Sinking, flowed 3 bbl. of oil per day.

Pike County

Kentucky West Virginia Gas Co. 5324 Aaron Justice, Lower Pompey Branch, T.D. 3,782 ft., flowed 353,000 cu. ft. of gas per day.

Johnson County

S. C. Allen & Crate Rice 1 J. L. Preston, Stave Branch, flowed 391,000 cu. ft. gas daily from Big Six.

WESTERN KENTUCKY COMPLETIONS

Davies County

Utica district: H. C. Farmer et al 7 Martin Weaver, 12 bbl., shot 60 qt., Jones sand, 1,180-96 ft., T.D. 1,202 ft.

Redwing & Schaffer 4 O'Flynn & Howard, dry, T.D. 740 ft.

Glenville district: A. Teller, trustee, 1 W. G. Crabtree, dry, T.D. 1,724 ft.

Cane Run School district: Cumberland 15 W. E. Ivy, pressure well, shot 20 qt. Stray sand, 575-95 ft., T.D. 612 ft.

Henderson County

Spottsville district: Walter Sargent et al 1 Chas. E. field, abandoned location.

Niagara district: Schneider & Guinn 3 Bettie Moss, 5 bbl., T.D. 720 ft.

Ohio County

Pleasant Ridge district: Ellis Massey & Wilkins 5 E. K. Moseley 60 bbl., shot 100 qt., Jett sand, 861½-96½ ft., T.D. 900 ft.

TENNESSEE

Staked last week was Joe S. May 1 Claude Barbee, a wildcat 8 miles north of Springfield, Tenn., on Highway 65 in Robertson County. The well moves the southwestern Kentucky play across the state line along the general trend of production.

Mississippi Fields

(Continued from Page 99)

SE NW 36-18n-5w, on seismograph structure, location.

Tippah County: Paul Thompson 1 E. J. Martindale, NW SE 27-1s-3e, building roads.

Warren County: Magnolia 1 H. Hall, NE NW NE 39-17n-4e (irregular), top Cane River 1,768 ft., Tallahatchie 1,973 ft., Wilcox 2,195 ft., cap rock 3,591 ft., anhydrite 3,760 ft., top salt at 3,845 ft., apparently found new salt dome, will plug back and test oil shows in Wilcox section.

MISSISSIPPI COMPLETIONS

Wildcat, Grenada County: Grenada County Drilling & Development Co. 1 Conn. Life Ins., NW SE 28-23n-5e, top Midway 855 ft., Selma 1,525 ft., Eutaw 2,415 ft., Tuscaloosa 2,642 ft., dry at 2,727 ft.

Tinsley, Yazoo County: Frank & George Frankel 1 Martin, SE NW E½ NW 1-9n-3w, Woodruff 4,773-79 ft., pumped 410 bbl. in 14 hr., T.D. 4,779 ft.

Slick-Urschel Oil 21 Slick, SE W¼ 36-11n-3w, Woodruff 4,825-39 ft., Eutaw 4,863 ft., Perry sand 5,258 ft., Stevens 5,347 ft., McGraw sand 5,741-65 ft., perforated casing 5,740-65 ft., T.D. 5,804 ft., flowed 28 bbl. hourly through 24/64-in. choke, P.B. depth 5,774 ft.

Snowden & McSweeney 5 Ben Hanley, NE S¼ 35-10n-3w, Woodruff 4,829-40 ft., pumped 30 bbl hourly, T.D. 4,861 ft.

Canadian Fields

(Continued from Page 88)

TURNER VALLEY LIMESTONE TESTS

North Turner Valley: Major Oils 3, LSD 1, 8-21-3w5, T.D. 8,120 ft., Madison at 7,655 ft., completing tests after final acidizing with 7,000 gal.

Royalite Oil 58, LSD 7, 22-20-3w5, finished at 7,787 ft., Madison at 7,220 ft., acidizing and testing.

Home Oil 9, LSD 9, 15-20-3w5, T.D. 8,478 ft., Madison at 7,974 ft., completing tests.

Royalite Oil 60, LSD 5, 14-20-3w5, deepening after cementing production string at 7,724 ft., Madison lime at 7,703 ft.

West Central section: Okalta Oil 11, LSD 10, 24-19-3w5, waiting equipment to complete tests.

United-British American 1, LSD 16, 12-19-3w5, below 8,192 ft., Madison limestone at 7,945 ft.

Drillers & Producers 1, LSD 13, 7-19-2w5, T.D. 8,042 ft., Madison at 7,599 ft., initial flow 150 bbl., acidizing lower zone.

LEGAL

Department of the Interior, General Land Office, Washington, D. C. Notice is hereby given that the oil and gas deposits in the following lands in the Caddo oil and gas field, Louisiana, are offered to the responsible qualified bidder of the highest bonus per acre, pursuant to the provisions of Section 17 of the leasing act of February 25, 1920 (41 Stat. 437), as amended by the act of August 21, 1935 (49 Stat. 674) at the royalty rate scale in the lease form shown in Circular 1386, at a sale to be held in the Federal Court Room, Post Office Building, Shreveport, Louisiana, at 10:00 o'clock on December 19, 1941: Parcel No. 1—S½ NE¼, W½ SE¼ Sec. 31, T. 20 N., R. 15 W., lot 1 Sec. 25, lots 1 and 3 Sec. 32, lots 1 and 2 Sec. 36, T. 20 N., R. 16 W., 274.27 acres; Parcel No. 2—all, fractional Sec. 20, T. 20 N., R. 16 W., 37.83 acres; Parcel No. 3—lot 3 Sec. 3, lots 3, 4, 5, Sec. 4, lots 5 and 6 Sec. 9, lots 6, 7, 8, 9, 10 Sec. 10, lot 1 Sec. 12, lots 1 and 2 Sec. 15, lot 1 Sec. 16, T. 20 N., R. 16 W., 307.68 acres; Parcel No. 4—SE¼ Sec. 9, E½ SE¼ Sec. 11, N½ SW¼, NW¼ SE¼ Sec. 12, T. 21 N., R. 16 W., 360.46 acres. The successful bidder must deposit on the day of the sale a certified check on a solvent bank, or cash, for one-fifth of the amount of each bid and file the showing of qualifications to receive a lease required by Section 7 of General Land Office Circular 1386. The remaining four-fifths, together with the annual rental in advance at the rate of $1 per acre, must be paid, and a $5,000 corporate surety bond must be furnished, prior to the issuance of the lease. The bidders are warned against violation of the provisions of Section 59 of the United States Criminal Code approved March 4, 1909, prohibiting unlawful combination or intimidation of bidders. The right is reserved to reject any and all bids at the discretion of the Secretary of the Interior.

Alberta Pacific Royalties 1, LSD 14, 6-19-2w5, T.D. 8,334 ft., Madison at 7,872 ft., acidizing and testing.

NEW TESTS STARTING

North Turner Valley: Major Oils 11, LSD 12, 9-23-4w5, rigging.

Major Oils 10, LSD 16, 15-22-4w5, working on cellar.

Major Oil 12, LSD 4, 36-21-3w5, rigging.

Major Oil 5, LSD 14, 35-21-4w5, rigging.

North End Petroleum 1, LSD 12, 9-21-3w5, rigged.

North End Petroleum 2, LSD 13, 9-21-3w5, working on cellar.

Major Oils 7, LSD 7, 8-21-3w5, spudded and below 103 ft.

Major Oils 8, LSD 13, 4-21-3w5, spudded and below 392 ft.

Ace Royalties 2, LSD 10, 22-22-4w5, spudding.

West Central section: Lion-Sunray 3, LSD 7, 13-19-3w5, location.

OUTSIDE FIELDS

Clearwater: Ram River Oils 2, 1-37-11w5, in Devonian limestone below 3,198 ft. with cores showing gas and crude from 3,140 ft.

Grease Creek: Grease Creek-Northwest 2, LSD 7, 13-29-7w5, in lower Benton below 1,672 ft.

Steveville: Standard 6 Princess, LSD 5, 27-20-12w4, below 2,021 ft.

Anaconda-Patricia 1, LSD 9, 31-20-12w4, T.D. 4,090 ft., P.B. 3,700 ft., perforating and acidizing to test Banff shale horizon.

Brooks: Northwest Co. 1, LSD 16, 20-18-14w4, below 3,221 ft.

Twin River: Western Drilling 1, LSD 16, 3-2-20w4, T.D. 3,969 ft., Madison at 3,945 ft., pumping 8 hours daily, making 65 bbl. crude and 3 bbl. water.

Del Bonita: Western-Terminal 2, deepening below 3,200 ft. after sidetracking.

Lethbridge: Lethbridge Petroleums 1, LSD 12, 11-8-22w4, at 4,350 ft., Madison at 4,145 ft., waiting for casing.

Vermilion: Anglo-Cummings 1, LSD 6, 22-48-7w4, below 1,946 ft.

New Valley Abandoned

On the New Valley structure, east of Turner Valley, McLeod Oil Co. 1 has been abandoned after standing several years below 8,400 ft. The test, started originally by New Valley Oil Co., has been deepened by McLeod Oil Co., the 4½-in. being run to 8,017 ft. Gas shows were met in several horizons, with brownish green crude at 6,230 ft., 38-gravity dark green crude at 6,525 ft. and 38-gravity green crude at 6,657 ft., the latter rising 260 ft. in the hole. The test failed to reach the Madison limestone.

Saskatchewan Gas Well To Deepen to Lime

In the Kamsack area, eastern Saskatchewan, S. & S. 4, which encountered shallow gas at 200 ft., has been deepened to 940 ft., and will run casing preparatory to drilling to the lime, expected around 1,095 ft. Gas from the shallow horizon will meanwhile be used to supply the town of Kamsack.

On the Little Pine structure, western Saskatchewan, Paynton Oils (Little Pine Petroleum) 1, LSD 13, 29-46-20w3, is standing in the Devonian at 2,140 ft. and preparing to run liner from 2,050 ft. to bottom and gun-perforate to test a porous horizon from 2,065 to 2,120 ft. The test got a 2-ft. stand at the Upper-Lower Cretaceous contact with heavy crude similar to the Dina field in Alberta, with a good commercial gas production at 1,521 to 1,560 ft. The lower porous zone, where tests are to be made, shows a water-free sandy lime with gas and oil shows coming up through a 1,700-ft. column of water from an upper horizon.

In South Central Saskatchewan Northwest Co., subsidiary of Imperial Oil, is carrying out extensive geophysical work on its acreage. In the Lloydminster area, western Saskatchewan, Oil & Gas Development Co. is working on a unitization plan for methodical development.

ONTARIO COMPLETIONS

Chatham Township: Union Gas 42, Lot 15, Concession 10, T.D. 1,640 ft., dry hole.

Union 43, Lot 18-9, T.D. 1,625 ft., dry hole.

Union 44, Lot 23-7, T.D. 1,625 ft., large gasser.

Malahide Township: Union Gas 70, Lot 26-5, T.D. 1,060 ft., 1,650,000 cu. ft. daily.

Union Gas 71, Lot 8-4, T.D. 1,095 ft., 230,400 cu. ft. daily.

Union Gas 72, Lot 4-4, T.D. 1,085 ft., 385,000 cu. ft. daily.

Union Gas 73, Lot 20-5, T.D. 1,070 ft., 75,000 cu. ft. daily.

Union Gas 74, Lot 25-5, T.D. 1,055 ft., 650,000 cu. ft. daily.

South Gosfield Township: B. Jasperson, Lot 7-1, T.D. 945 ft., 15,000 cu. ft. daily.

North Cayuga: Lymburner Bros. & Webber, Lot 13-1, South Talbot Road, T.D. 725 ft., 60,000 cu. ft. daily.

Oneida Township: Union Gas 266, Lot 23, East Plank Road, T.D. 750 ft., 27,000 cu. ft. daily, shot at 5-ft. intervals.

Raleigh Township: E. P. Rowe, Mortier farm, Lot 5, Front Concession, T.D. 3,280 ft. through Trenton limestone, dry hole.

Walpole Township: Stanley Syndicate, Lot 20-1, T.D. 920 ft., 16,000 cu. ft. daily.

Dominion Natural Gas, Lot 21-1, T.D. 970 ft., dry hole.

Walpole Gas Syndicate, Lot 15-3, T.D. 1,015 ft., 42,000 cu. ft. daily.

Peacock Point Gas & Oil Syndicate, Lot 14-1, T.D. 1,000 ft., dry hole.

Dominion Natural Gas, Lot 5-2, T.D. 975 ft., dry hole.

F. Reichheld, Lot 4-4, T.D. 990 ft., dry hole.

W. C. Patterson, Lot 14-9, T.D. 940 ft., 15,000 cu. ft. daily.

Walpole Gas Syndicate, Lot 14-6, T.D. 985 ft., 24,000 cu. ft. daily.

Dominion Natural Gas 2 Roth, Lot 24-2, T.D. 895 ft., dry hole.

Wainfleet Township: H. Emerson, Lot 15-7, T.D. 375 ft., 50,000 cu. ft. daily.

Seneca Township: B. Mehlenbacker, Lot 11-3, T.D. 575 ft., 10,000 cu. ft. daily.

Oneida Township: Port-Colborne-Welland Gas Co. 2 Harper, Cook Block, T.D. 710 ft., 25,000 cu. ft. daily.

North Cayuga Township: Grand River Syndicate, Lot 18-2, T.D. 745 ft., 35,000 cu. ft. daily.

Lake Erie: Wood & Prior 3, opposite Lot 186 Romney, T.D. 1,258 ft., 100,000 cu. ft. daily.

Tilbury field, Tilbury East Township: Union Gas 313, Lot 167, Talbot Road North, T.D. 1,420 ft., P.B. 1,400 ft., 240,000 cu. ft. daily after shot.

Union Gas 314, Lot 176, Talbot Road North, T.D. 1,350 ft., 365,000 cu. ft. daily.

De Clute field, Raleigh Township: Union Gas 53, Lot 145, Talbot Road North, T.D. 1,550 ft., 445,000 cu. ft. daily after shot.

Emergencies come and emergencies go. In the past thirty years of building carburetors, we have gladly turned on the midnight oil on many occasions. Night shifts have become necessary to meet the demands for more carburetors.

But increased man-hours alone isn't the complete answer. There's the procurement of materials and the allocation of finished products to many industries which calls for a closer cooperation between supplier and producer.

We are getting our shoulder to the wheel. Every facility of our Engineering and Production Departments and the wholehearted cooperation of every employee is utilized to the end that our customers engaged in national defense work are not kept waiting.

ENSIGN
CARBURETOR CO., LTD.
HUNTINGTON PARK, CALIF. • DALLAS, TEXAS • CHICAGO, ILL.

Personal Paragraphs

KENNETH R. TEIS, formerly consulting engineer of Tulsa, has accepted the position as chief petroleum engineer for the Sunray Oil Co. This announcement was made by HARRY H. MACK, vice president in charge of production, in whose department Mr. Teis will be employed.

W. G. WARNOCK has been appointed manager of priorities for Mid-Continent Petroleum Corp., according to an announcement by JACOB FRANCE, president of the company. Mr. Warnock was formerly the company's eastern division construction superintendent, at Terre Haute, Ind.

J. A. LA FORTUNE, vice president, Warren Petroleum Corp., Tulsa, went to South Bend, Ind., last week to see the Notre Dame-University of Southern California football game. Mr. La Fortune is an alumnus of the former institution.

W. L. JAMES, purchasing agent, Stanolind Oil & Gas Co., who is now on assignment as purchasing consultant in the Office of Production Management, in Washington, D. C., but who is currently in Tulsa, was feature speaker at a meeting Tuesday night of the Purchasing Agents Association of Tulsa.

ROBERT RUSSELL, Texas Co., stationed at Caracas, Venezuela, was an honor guest at a luncheon given by the Houston chapter of Nomads at Houston, Tex., last week. Other guests included J. C. VAN DE BERG, Shell Oil Co., Inc., and C. F. BEDFORD, Stanolind Oil & Gas Co.

JAMES W. GALLAGHER who recently returned from a 2-year assignment in Egypt, where he was associated with Standard Oil Co. of Egypt, is now visiting his home in Tulsa, and will leave in a couple of weeks for Caripito, Venezuela, where he will be with Standard Oil Co. of Venezuela. Mr. Gallagher was formerly with Carter Oil Co., at St. Elmo, Ill., before being sent to Egypt.

N. T. GILBERT, general manager, Mid-States Oil Corp., Tulsa, and director of the Independent Petroleum Association of America, has been selected to serve as toastmaster for the founders' day banquet which will mark the fiftieth anniversary of Oklahoma A. & M. College, Stillwater, Okla. The banquet will open a 3-day celebration.

L. G. BURT, Tulsa oil producer, who was seriously injured in October, has recovered and is back on the job again.

W. E. GOBLE, independent operator of Fowler, Calif., has started a wildcat test 4 miles east of Kingsburg in Tulare County, California.

EDWIN P. DAVIS, title attorney for Shell Oil Co., Inc., at Centralia, Ill., last week was elected president of the Centralia Kiwanis Club.

BILL CORDELL, for 5 years a scout with Tide Water Associated Oil Co., and recently stationed at Jackson, Miss., has resigned.

REID BRAZELL, vice president of Leonard Refineries, Inc., Alma, Mich., has been appointed to the industry committee on refining for District 2, the OPC announced Monday.

A. T. REMINGTON, West Central Texas district scout for Pure Oil Co., is being transferred to Jackson, Miss. He will be replaced at the Abilene office by JACK PEVETO, from the Mississippi district.

A. C. RUBEL, vice president of Union Oil Co., Los Angeles, Calif., has been honored by having the company's newest tanker named for him. Mr. Rubel is at present the only active executive of the company with a tanker bearing his name.

B. F. (BUCK) WEAVER has returned to his home in California after a year's stay in Peru, where he was in charge of drilling and other work at the Agua Caliente Concession of the Cia. Petrolera Ganso Azul Ltda. (Blue Goose Oil Co.) in the jungles of the upper Amazon River basin.

Do You Remember?

From The Oil and Gas Journal Files

25 YEARS AGO

Missouri is still determined to become an oil state.

Raymond Foss Bacon and William Allen Hamor, both of the Mellon Institute, Pittsburgh, Pa., have published two volumes entitled "The American Petroleum Industry." In the books are special chapters by F. G. Clapp, Roswell H. Johnson, J. P. Cappeau and L. G. Huntley.

John G. Lamont, 47, European manager of the Pure Oil Co., died at the Rockefeller Institute, New York City, November 21. He had been ill for some time.

Rudyard Kipling finds much fault with oil as a naval fuel, but admits that in the battle of Jutland, the smoke from oil enabled a damaged British destroyer to make her escape from the Germans.

20 YEARS AGO

"Hard Winter" Davis, once a wealthy cattle man, asserts that continuance of the present mode of oil operations in the Salt Creek field will result in the utter ruination of vast areas of grazing land in North Central Wyoming.

Walter C. Teagle, president of the Standard Oil Co. of New Jersey, while in Tulsa last week, expressed the hope that the world petroleum situation would be threshed out by the disarmament conference now in session.

The following men will represent petroleum on the American Mining Congress planning committee: H. L. Doherty, H. F. Sinclair, Walter Teagle, George Davidson and A. L. Beaty.

10 YEARS AGO

Strong unofficial opinion prevailed among oil men closely observing the East Texas situation that $1 oil and 100-bbl. daily well limits will arrive in East Texas in the next few days.

Jerome K. Drumheller, who drilled the discovery well in the Cut Bank, Montana, field 2 years ago, has asked the Idaho Public Utilities Commission for a certificate of convenience to build a $15,000,000 pipe line to bring natural gas from Cut Bank to Spokane, Wash.

GREER WARREN, of Kingfisher, Okla., has been transferred to the Rogers, Ark., office of the Arkansas Western Gas Co.

DR. CLAUD C. ALBRITTON, professor of geology at Southern Methodist University, Dallas, Tex., addressed the Dallas Petroleum Geologists Society last week.

H. A. MARTIN, of Frampton Oil Co., with Mrs. Martin celebrated the fiftieth anniversary of their marriage at their home in Petroleum Center, Pa., last week. Mr. Martin has been in the oil business for 35 years.

J. C. CHATFIELD has been appointed editor of The Empire, house organ of Cities Service Oil Co., published at Bartlesville, Okla. He succeeds DON A. McNEAL, who recently resigned to enter military service.

SAM ARONSON, geologist for the Atlantic Refining Co., has resigned after 21 years of continuous service with the company. Mr. Aronson will continue in the oil business as an independent operator and will reside in Dallas, Tex.

A. C. SAUL, of Shell Oil Co., Inc., with offices in San Francisco, Calif., arrived in Los Angeles several hours late last week due to the wreck of a freight train in a tunnel north of Los Angeles. Because of the time lost he flew back to San Francisco.

J. H. TUTTLE, director and vice president of Standard Oil Co. of California, has been elected treasurer of the company, succeeding GEORGE J. O'BRIEN, who has been appointed assistant to the president and representative of the board of directors in Los Angeles, Calif.

JOE McMILLAN, landman for the Adams Oil & Gas Co., Houston, Tex., left last week for a deer hunt in Southwest Texas.

DORSEY HAGER, consulting geologist, Centralia, Ill., will discuss "Petroleum Development in Illinois" in an address before the Illinois State Bar Association in Chicago, Friday evening.

V. L. COTTINGHAM, Midland, Tex., chairman of the North Basin Pools Engineering Committee, addressed the Fort Worth Engineers Club last week. He spoke on oil and gas conservation.

C. V. QUINN, superintendent of Warren Petroleum Corp., at Fairbanks, Tex., has been transferred to the new plant on the Pure Oil Co. properties and will have headquarters at Medill, Okla.

WILLIAM B. HEROY, vice president and chief geologist, Pilgrim Exploration Co., Houston, Tex., has been elected a director of the American Institute of Mining and Metallurgical Engineers.

J. S. GAYNOR, exploitation engineer in the South Texas division of Shell Oil Co., Inc., Houston, Tex., sailed from New York last week for South America for an extended stay on a special assignment.

JERRY CHESNUTT, vice president, Republic Production Co., with headquarters in San Angelo, Tex., has returned from Dallas, where he underwent an operation on his leg. He was away a month. Mr. Chesnutt is in charge of West Texas operations for the company.

ROBERT E. SPEER, associate petroleum engineer in the Mid-Continent office of the U. S. Geological Survey at Tulsa, has been detailed to the Washington offices for an indefinite period. JAMES L. MINAHAN, assistant petroleum engineer at Washington, comes to Tulsa to take Mr. Speer's place.

From an Oil Family

John S. Cordell, vice president and general manager of Cities Service Oil Co. of Pennsylvania, began his service in the oil industry with Evans-Thwing Co., Ponca City, Okla. From bookkeeper, at a salary of $75 per month, he was by degrees promoted to assistant sales manager.

JOHN S. CORDELL

The Empire Co. purchased several plants from Evans-Thwing, and Mr. Cordell was transferred to the Empire organization. A short while later Mr. Cordell became sales manager in chief of the Empire refineries. From this position he went to Boston, Mass., where he became general manager of Cities Service Refining Co.

In 1938 he was elected vice president and general manager of his present company, his election following the completion of the consolidation of the eastern oil marketing, export and transportation properties of the Cities Service organization in the eastern part of the United States. Until Mr. Cordell's election, the activities of the Cities Service Oil Co. of Pennsylvania were handled by a committee consisting of general managers and vice presidents of all the individual companies that are parts of the consolidation. Mr. Cordell makes his headquarters in the Cities Service Building, New York.

Mr. Cordell married Miss Ethel Milburn at Tecumseh, Okla. They have one daughter. He is a member of several clubs, including the Twenty-Five Year Club. He also belongs to the American Petroleum Institute and the National Petroleum Association.

Mr. Cordell has four brothers, all in the oil business. These are O. L. Cordell, president, Bareco Oil Co.; Capt. Clark R. Cordell, on leave of absence from Phillips Petroleum Co.; Fred W. Cordell, regional manager of Phillips Petroleum Co., and Chester E. Cordell, president, Cordell Oil Co., Muskogee, Okla.

SAM VAUCLAIN, scout for Sun Oil Co. in Mississippi for the past 2 years, has left to enter military service.

ALLAN PETT, of Gas Service Co., was named president of the Wellsville, Kans., Chamber of Commerce, on November 12.

FRANK BENTLEY, of the Gas Service Co., Kansas City, recently was elected treasurer of the Ivanhoe Golf and Country Club.

JACK TORBERT, business manager of the Wyandotte (Kansas) County Gas Co., has accepted the chairmanship of the Christmas seal fund sale in Wyandotte County.

FREDERICK A. BIPPUS recently became head of the purchasing department of Cameron Oil Co., at Evansville, Ind. He formerly was employed by Sun Oil Co. in that city.

JACK FISHER, of the pipe-line department of Cities Service Oil Co., got a severe shock when lightning struck near where the crew was building a line near Guthrie, Okla., last week.

W. M. GRIFFITH, vice president and general manager, Plymouth Oil Co., at Sinton, Tex., has been appointed a member of the board of directors of the Texas College of Arts and Industries, at Kingsville, Tex.

J. C. SHAW, production superintendent for Magnolia Petroleum Co. at Duncan, Okla., was planning a deer hunt in West Texas last week. Next morning he found a young spike-horn buck eating in his flower beds.

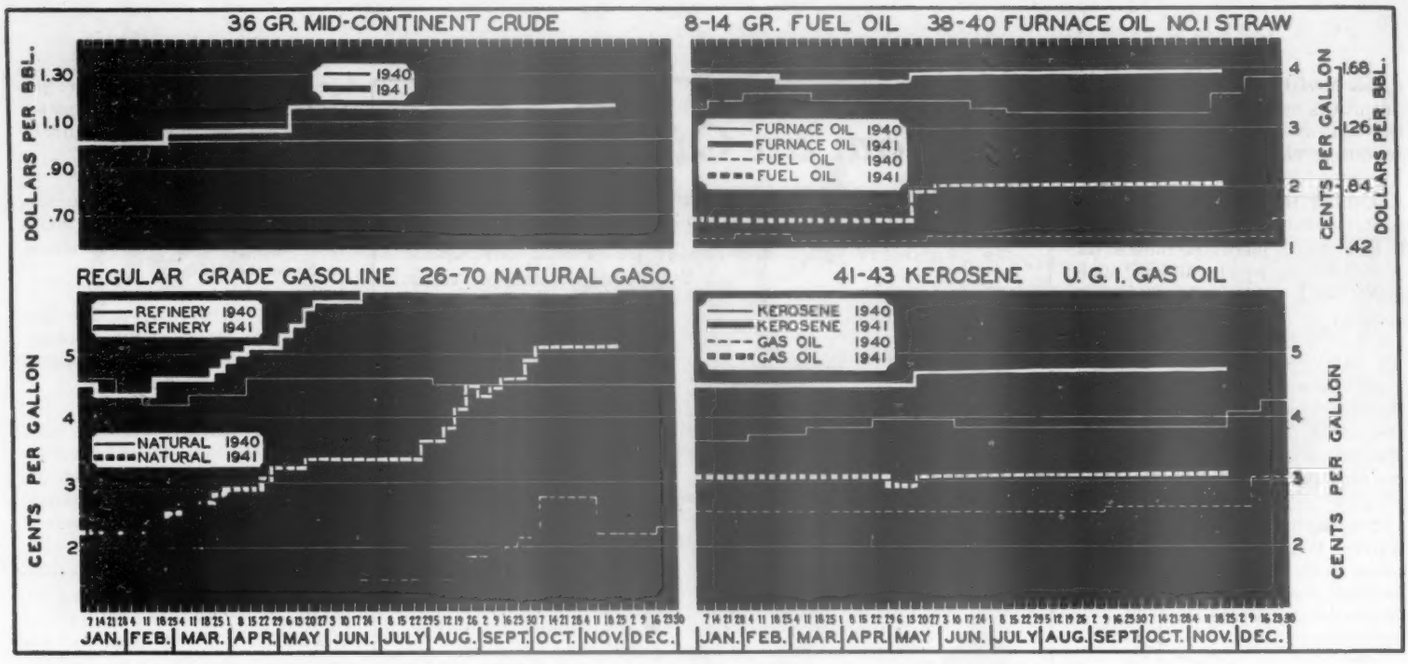
H. W. ROE, formerly traffic manager of Mid-Continent Petroleum Co., Tulsa, takes the title of general traffic manager, and advancements have been made in positions held by L. W. WITTE and H. C. LECHNER. Mr. Witte becomes assistant general traffic manager and Mr. Lechner becomes assistant traffic manager.

J. E. BRANTLY, president, Drilling & Exploration Co. and president of the American Association of Oilwell Drilling Contractors, left last week for South America on an inspection tour of operations being conducted there for the Brazilian Government and private operators in other countries.

GLEN RUBY, consulting geologist, and EARL NOBLE, chief geologist for Union Oil Co., Los Angeles, Calif., had a harrowing experience on a recent reconnaissance trip through a Costa Rican jungle. They were headed back toward the airport, after completing the observation flight, with a limited fuel supply when they were forced to fly over an incoming fog. Due to wind the plane drifted over an unseen mountain range which had been obscured by the clouds, and when the flyers nosed groundward again they suddenly recognized the shore outline of Lake Nicaragua. Off course, and with only 20 minutes supply of fuel, the only landing place appeared to be a small pasture full of cattle. They flew over once to frighten the cattle into the woods, and to locate landing hazards, and then a delicate landing was made, ending at the edge of a swamp where the plane tipped up on its nose. They reached San Jose 4 days later, and made arrangements for getting the plane back to its owners. This involved a 36-mile ride by horseback on the part of Mr. Ruby, and the swimming of four rivers, to reach a telegraph office.

CLAY TALLMAN, who recently retired as general attorney for Stanolind Oil & Gas Co., contributed an article in the November issue of the Texas Law Review on the subject: "The Public Domain." Prior to his association with Stanolind, Mr. Tallman was for several years commissioner of the general land office, Department of the Interior.

Shifts: B. M. BRADLEY, engineer, Continental Oil Co., from Anahuac, Tex., to Tulsa; FRANK S. CASEY, superintendent, Gulf Pipe Line Co., from Dublin, Ind., to Connersville, Ind.; FRANK FRANKEL, Frankel Bros., from Long Beach, N. Y., to Houston, Tex.; T. D. TABBERT, engineer, Shell Oil Co., Inc., from Perry, Okla., to Pampa, Tex.; M. E. THOMAS, geologist, Phillips Petroleum Co., from Bartlesville, Okla., to Red Bank, N. J.; M. D. LOGAN, president, Dave Oil Co., from Okmulgee, Okla., to Kensington, Md.; M. M. HARDIN, superintendent, Cities Service Oil Co., from Seminole, Okla., to Madison, Kans.; DON J. BAIZE, superintendent, Roosevelt Oil Co., from Mount Pleasant, Mich., to Long Beach, Calif.; JAMES M. PHILLIPS, engineer, Stanolind Oil & Gas Co., from Biloxi, Miss., to Ocean Springs, Miss.; F. W. BARTLETT, engineer, Socony-Vacuum Oil Co., from New York City to Caracas, Venezuela; J. R. MUNCE, Pittsburgh, Pa., to Sarasota, Fla.



Representative Mid-Continent Quotations on Crude Oil and Refined Products, Basis Oklahoma (Group 3)

Soft Spots in Midwest Tank-Wagon Price Not Reflected in Group 3

By H. STANLEY NORMAN

SOFT spots are beginning to appear in the Middle West motor-fuel market, although most of the evidence is confined to slight reductions in the tank-wagon price structure. There is no change in the general condition of the Mid-Continent tank-car market. Still, the buying pressure now is substantially less than during the latter part of the summer when many refiners had considerably less gasoline on hand than had been previously considered minimum working stocks.

Petroleum markets are, for all practical purposes, blanketed with a federal price ceiling and this condition has existed, in effect, for several months. This control over prices, along with tardy development of extremely cold weather, is likely to prevent the rise of fuel-oil quotations as a compensating balance against softening of gasoline markets, unless distributors can convince the Office of Price Administration that costs justify the elevation of burning products.

Burning Oils Moderately Active

Calls for distillate fuel oils are reasonably persistent, Mid-Continent refiners report, but the market is considerably short of the volume that would have developed under more severe weather conditions. Distributors and consumers of heating oils are still working mostly from inventories and until these reserves are liquidated refiners expect the tank-car market to continue without particular feature. Many refiners are still withholding quotations on light fuel oils, anticipating that higher prices will be established next month and continue through the winter. One factor that may have contributed to the delay in fuel-market development is the extension of deliveries by inland waterways beyond the time normally applicable.

It seems likely that inland waterways also have been a contributing factor to recent evidence of gasoline softening. The points in the Middle West where tank-wagon prices have been reduced during the past 10 days are served to some extent by barges plying the Mississippi.

A factor that may soon be reflected in the motor-fuel market is the probability that smaller quantities of tetraethyl lead will be blended at refineries and terminals. Discussions are reported from Washington that would prohibit use of tetraethyl lead in all motor fuel for civilian consumption. This possibility, reported as under consideration by OPM, would probably reduce the cost of finished gasoline for a period, although eventually the use of other knock depressants might react in the opposite direction.

Points at which tank-wagon prices have declined are St. Louis, Mo.; Grand Rapids, Mich.; Decatur, Ill.; and North Platte, Neb. The reductions range from a low of 0.4 cent at Grand Rapids to 1.4 cents per gallon at St. Louis, where the previously subnormal price is now 2 to 2.5 cents below the general market in that section of the Middle West. There is a larger volume of recycling-plant distillate reaching the Middle West market than during the middle of the summer, and this product is offered at prices under refinery motor fuel.

Natural-Gasoline Prices Firm

Natural-gasoline markets are strong both in Group 3 territory for northern movement and in the North Texas district for shipment to the Gulf Coast. There is a substantial movement of natural gasoline from the Gulf to East Coast terminals and suppliers are unable to satisfy the full demand in that territory. Oklahoma and Kansas manufacturers continue to restrict shipments of natural gasoline on a basis of sales to customers in previous months. Prices of 5.125 cents per gallon for 26-70 material in Oklahoma-Kansas territory and 4.75 cents in North Texas are firm. Buyers are paying the market without protest when material is made available.

Residuel-fuel calls are numerous but material available for spot-market trading is strictly limited in the Group 3 territory. Consumption is at record high levels in practically all Middle West industrial centers and railroads are calling on their refinery suppliers for larger quantities than at any time in recent years.

Refined Oil Market Barometer

The near-future outlook for petroleum markets became more varied this week. The reasons were: (1) Price concessions were reported in the eastern area in tank-car sales of light fuel oil. (2) Tank-wagon markets for motor fuel declined at a few middle western points. (3) Low-octane gasoline sold at reduced prices on the Pacific Coast refinery market. In contrast, Gulf Coast gasoline prices are at the maximum specified by Price Administrator Henderson. Interior refinery markets are firm and unchanged.

MID-CONTINENT: Natural gasoline continues as the strongest product, but is supported by a firm tone in the general market.

GULF COAST: Refiners are sold up on motor fuel for duration of 1941. Lend-lease sales continue at figures above OPA's price ceiling.

CALIFORNIA: Strong demand and firm prices for fuel oil offset soft tone of gasoline.

PENNSYLVANIA: Demand for bright stock has tapered off. Top prices for kerosene have been reduced slightly.

CHICAGO: Gasoline demand firm. Buyers more active in search for fuel oil.

Eastern Fuel-Oil Prices Yield To Pressure of Slack Demand

By J. P. O'DONNELL

NEW YORK, Nov. 25.—The continued slack demand for kerosene and heating oils has entirely eliminated high prices in the New York Harbor area and no sales above the minimum 5.3 cents for kerosene or No. 1 fuel oil and 5.2 cents for No. 2 fuel oil have been reported. The weakness of the market is apparent from the fact that 2 weeks ago some sales of these products were being made at highs of 5.75 cents and 5.5 cents, respectively.

Slack demand is attributed entirely to the mild weather which has held consumption at early season levels. It has resulted in building up stocks to record heights. Additions to storage have been made each week without interruption since the middle of June and by November 15 they had reached a total of 22,375,000 bbl. on the East Coast and were more than 28 per cent higher than at the same time a year ago. In contrast to the continued building up of stocks this year, withdrawals were started in mid-October last year. Thus the demand season is already a month late in starting this year.

A somewhat similar condition also exists in the residual fuel-oil market. Tank-wagon sales at less than 4 cents per gallon have been reported as demand for this fuel for heating purposes remains at an unusual seasonal low. However, industrial demand and marine consumption continues high so that there has been no decline in refinery prices which vary from $1.35 to $1.50 per barrel. Prospects of further gains in industrial and marine requirements virtually insure strength for residual fuel oil. In fact, these demands are expected to be so heavy as to tax present supply sources, a possible condition which the Bureau of Mines recognizes in its estimate of December requirements.

Another product which is experiencing a seasonal slump is Pennsylvania bright stock. This is an entirely normal trend as demand for lighter lubricating oils increases with cold weather. The ability of the market to resist this tendency will be an important factor when demand begins to rise again next year. Increasing supplies of bright stock have narrowed quotations on 25-pour material which is being quoted by practically all refineries at 25 cents in contrast to the former range of from 25 to 28 cents.

Another development affecting the New York market which had been anticipated for several months occurred last week when the Office of Price Administration established a ceiling on wax prices. Prices indicated in the order are substantially under recent quotations of 6 to 6.25 cents on crude scale and of 5.5 to 7.5 cents on fully refined grades. Predictions that a ceiling would be established on wax prices were voiced as long ago as 2 months so that last week's order was not unexpected. Wax prices have been showings signs of weakness for the past 2 weeks and while the majority of suppliers are continuing to quote at levels that have held for some time, there have been definite indications that these prices have not been too firm.

The retail markets have also shown some signs of weakness but this has been limited entirely to heating oils where some price concessions have been made as methods of relieving excess inventories were adopted. The retail-gasoline market remains steady as sustained demand has delayed the normal steep rise in inventories at this time of year. However some service stations are still engaged in a battle over whether to continue or discontinue the 7 p.m. to 7 a.m. closing. Members of a New Jersey association advocating the night closing attempted to force it on a few noncompliers by descending on them in large numbers, ordering a gallon of gasoline and paying for it with $20 bills. In retaliation the nonclosing dealers made change in small coins. The majority of stations throughout the metropolitan area have continued to close at night.

An increasing proportion of the East Coast demand is now being supplied by tanker and decreases in the volume transported by both pipe lines and tank cars are reported. There are no figures immediately available on pipe-line shipments but rail movement of crude oil and refined products dropped to 3,756 cars in the week ended November 15. This is a daily average of 536 cars and compares with an average of 562 cars daily in the previous week. On the basis of 225 bbl. per car, this represents a total of 120,600 bbl. during the week ended November 15 against a total of 126,450 bbl. in the previous week. This was the second successive decline in rail movement, a trend that will doubtless continue as more tankers are returned to Western Hemisphere service and as new tankers are completed.

Reports of oil-barge and towboat construction indicate that there will be no dimunition of river transport. In the November report, the American Bureau of Shipping shows a total of 84 oil barges of 43,030 gross tons under contract in American yards. These, plus one harbor tanker and several towboats or tugs being built for oil companies, constitutes approximately 35 per cent of all the small-vessel construction, excepting U. S. Navy work, now under way in this country and indicate the importance of petroleum in water transportation. Oil companies building barges are: Ashland Oil & Refining Co., 8; Gulf Oil Corp., 4; Standard Oil Co. (Kentucky), 1; Standard Oil Co. (Ohio), 12; Pan American Petroleum & Transport Co., 4; Taylor Refining Co., 1. Others are being built for stock and by towing companies.

A.P.I. Weekly Refinery Statistics

Week Ended November 22, 1941

	Capacity reporting (per cent)	Total gasoline stocks (bbl.)	Residual fuel-oil stocks (bbl.)	Gas oil and distillate stocks (bbl.)	Daily crude runs (bbl.)
East Coast	100.0	19,225,000	11,931,000	22,216,000	640,000
Appalachian	83 8	3,468,000	414,000	652,000	125,000
Ind., Ill., and Ky.	84.4	15,498,000	4,637,000	5,686,000	650,000
Okla., Kans., and Mo.	80.7	7,932,000	2,265,000	2,090,000	302,000
Inland Texas	63.2	2,434,000	1,364,000	463,000	135,000
Texas Gulf	91.0	11,174,000	8,081,000	6,407,000	1,020,000
Louisiana Gulf	94.2	2,726,000	2,248,000	1,669,000	133,000
N. Louisiana and Ark.	49.9	447,000	385,000	364,000	51,000
Rocky Mountains	50.1	1,095,000	353,000	142,000	49,000
California	90.9	15,255,000	63,054,000	13,107,000	514,000
Total reported	86.4	79,254,000	94,732,000	52,796,000	3,619,000
Est. unreported		5,325,000	1,250,000	1,600,000	376,000
*Est. total		†84,579,000	95,982,000	54,396,000	3,995,000
*Est. total previous wk.		83,412,000	95,993,000	54,983,000	4,010,000
*Nov. 23, 1940		79,417,000	105,358,000	47,348,000	3,510,000

*Bureau of Mines. †Includes 7,516,000 bbl. of aviation gasoline.

Stocks of Crude Oil in the United States

(BUREAU OF MINES ESTIMATES)

Week ended November 15, 1941	240,399,000 barrels
Week ended November 8, 1941	241,829,000 barrels
Week ended November 16, 1940	261,619,000 barrels

Figures do not include stocks of heavy, unrefinable California crude.

Coastal Refiners Sold Up on Gasoline Until January 1

HOUSTON, Tex., Nov. 24.—Gulf Coast refiners now are disinterested in new gasoline business ahead of January 1. Taxed to the limit to meet continued requests of the U. S. Navy for lend-lease material, they are claiming that all supplies on hand and the output of their plants already are committed at least until that time. If lend-lease demand keeps up at its present pace, they feel that there might be no material in sight for the open market even after the first of the year.

Lend-lease awards constitute practically all the business now being done by Gulf Coast refiners. This business has developed to such an extent, however, that lately it has been impossible to bid in full on all requests for gasoline. This does not apply to diesel gas oils, of which there seem to be ample supplies, judging from the fact that some of the recent requests have been overbid.

Bids on lend-lease gasoline are showing further strength. Latest awards have been made on the basis of from 6.7 to as high as 6.9 cents per gallon for material of not lower than 68 octane.

There is a slight decline in fuel-oil bidding which now is running around $1.025 as against earlier awards at $1.05. This fuel is comparable to Gulf Coast No. 5 grade.

Reflecting the increased demand for Gulf Coast gasoline, inventories of independent refiners November

(Continued on Page 111)

RETAIL OIL MARKETS...

Tank-wagon and filling-station prices on gasoline and kerosene furnished by larger marketing firms

Prices as of November 25, 1941

Taxes

The gasoline quotations given in the following tables include the 1½-cent federal tax, as well as state, county, and city taxes. The gasoline is the regular or standard grade. In most areas lower grades and a premium grade also are available.

Standard Oil Co. (Indiana)

	Gasoline Tank wag.	Gasoline Dlr. tax	Gasoline Inc. tax	Kero. tank wag.
Chicago, Ill.	16.1	14.1	4.5	10.3
Decatur	15.4	13.4	4.5	9.5
Joliet	16.4	14.1	4.5	10.3
Peoria	16.2	13.7	4.5	10.1
Quincy	13.4	12.4	4.5	10.0
Davenport, Ia.	16.2	14.7	4.5	10.1
Des Moines	15.9	11.9	4.5	9.8
Mason City	16.2	14.7	4.5	10.1
Duluth, Minn.	17.7	16.2	5.5	10.6
Mankato	17.4	15.9	5.5	10.3
Minneapolis	17.4	15.9	5.5	10.3
La Crosse, Wis.	17.4	15.9	5.5	10.3
Green Bay	17.7	16.2	5.5	10.6
Milwaukee	17.6	16.1	5.5	10.5
Detroit, Mich.	15.9	14.4	4.5	9.6
Grand Rapids	15.9	13.8	4.5	9.6
Saginaw	15.9	14.4	4.5	9.6
Evansville, Ind.	16.9	15.4	5.5	9.6
Indianapolis	17.1	15.2	5.5	9.8
South Bend	17.5	16.0	5.5	10.2
Fargo, N. D.	18.4	16.9	5.5	11.3
Huron, S. D.	17.8	16.3	5.5	10.7
Kansas City, Mo.*	14.9	13.4	4.5	9.4
St. Louis*	13.4	11.9	4.5	9.8
St. Joseph	15.7	14.2	4.5	9.6
Wichita, Kans.	14.8	12.7	4.5	8.0

*State tax 2 cents, 1-cent city tax, and 1½-cent federal tax.

Exclusive of state general sales taxes.

Discounts to commercial consumers. On purchases per month off tank-wagon prices: 1,000 gal. or more, 1.5 cents off, minimum delivery 25 gal.

Stanolex Fuel Oil in Chicago

Effective Sept. 18, 1941, f.o.b. Chicago, tank-wagon prices: Standard heater oil, 1-99 gal., 9.0 cents; 100-149 gal., 8.0 cents; 150 gal. and over, 7.5 cents. Stanolex fuel oil No. 1, 1-99 gal., 8.5 cents; 100-149 gal., 7.5 cents; 150-399 gal., 7.5 cents; 400 gal. and over, 7.0 cents. Stanolex furnace oil, 1-99 gal., 8.5 cents; 100-149 gal., 7.5 cents; 150-399 gal., 7.5 cents; 400 gal. and over 7.0 cents. Stanolex fuel oil A, 1-99 gal., 8.0 cents; 100-399 gal., 7.0 cents; 400-749 gal., 6.0 cents, 750 gal. and over, 5.25 cents. Stanolex fuel oil B, 1-99 gal., 8.0 cents; 100-399 gal., 7.0 cents; 400-749 gal., 6.0 cents; 750 gal. and over 5.25 cents. Stanolex Bunker C fuel oil, 1-399 gal., 6.5 cents; 400-999 gal., 5.5 cents; 1,000 gal and over, 4.5 cents.

Ohio

STANDARD OIL CO. OF OHIO

	Gasoline Cons'r tank wag.	Gasoline Dlvided dlr.	Gasoline Inc. tax	Kero. tank wag.
Ohio points	16.0	15.0	5.5	*9.0

*Includes state tax of 1 cent.

Southern District

STANDARD OIL CO. (KENTUCKY)

	Gasoline Cons'r tank wag.	Gasoline Net dlr.	Gasoline Inc. tax	Kero. tank wag
Atlanta, Ga.	18.50	18.50	7.5	10.0
Augusta	18.50	18.50	7.5	9.5
Macon	18.50	18.50	7.5	10.0
Savannah	17.50	17.50	7.5	9.0
Birmingham, Ala	19.00	19.00	8.5	9.0
Mobile	19.00	19.00	9.5	8.5
Montgomery	20.00	20.00	9.5	10.0
Jackson, Miss	18.00	18.00	7.5	9.0
Vicksburg	17.50	17.50	7.5	8.5
Jacksonville, Fla.	18.50	18.50	8.5	8.0
Miami	18.50	18.50	9.5	8.0
Pensacola	19.00	19.00	9.5	8.0
Tampa	18.50	18.50	8.5	8.0
Lexington, Ky.	17.50	17.50	6.5	9.0
Covington	16.50	16.50	6.5	9.0
Louisville	17.00	17.00	6.5	8.5
Paducah	15.50	15.50	6.5	8.5

Price basis to tank-wagon consumers, effective January 4, 1937, 3 cents per gallon below tank-wagon price.

Montgomery, Ala., has a county tax of 1 cent per gallon, and a city tax of 1 cent per gallon on gasoline, in addition to state tax, and 1 cent per gallon on kerosene. Mobile, Ala., has a city gasoline tax of 2 cents per gallon; Birmingham, Ala., has a city gasoline tax of 1 cent per gallon; Pensacola, Fla., has a city gasoline tax of 1 cent. All are included in the table.

Atlantic Coast District

STANDARD OIL CO. OF NEW JERSEY

	Gasoline Cons'r tank wag.	Gasoline Dlr. tank wag.	Gasoline Inc. tax	Kero. tank wag.
Atlantic City	13.5	14.0	4.5	7.9
Newark	13.5	14.0	4.5	7.9
Annapolis	14.85	15.35	5.5	9.7
Baltimore	14.25	14.75	5.5	8.7
Cumberland	15.65	16.15	5.5	10.2
Washington, D. C.	12.50	13.00	3.5	9.2
Danville, Va.	16.95	17.45	6.5	10.45
Norfolk	15.75	16.25	6.5	10.2
Petersburg	16.05	16.55	6.5	11.2
Richmond	16.05	16.55	6.5	11.2
Roanoke	17.25	17.75	6.5	10.7
Charles'n, W. Va.	17.55	18.05	6.5	11.5
Parkersburg	16.85	17.35	6.5	11.5
Wheeling	16.85	17.35	6.5	11.8
Charlotte, N. C.	18.40	18.90	7.5	9.5
Hickory	18.95	19.45	7.5	10.5
Mount Airy	18.80	19.30	7.0	9.7
Raleigh	18.15	18.65	7.0	10.5
Salisbury	18.45	18.95	7.5	10.9
Charleston, S. C.	17.25	17.75	7.5	(*)
Columbia	18.10	18.60	7.5	(*)
Spartanburg	18.80	19.30	7.5	(*)

Price basis to Essolene undivided dealers: Dealer tank-wagon price less 0.5 cent per gallon. Price basis to commercial consumers, effective March 8, 1937, in Maryland, District of Columbia, and in Arlington and Fairfax counties in Virginia and March 12 in New Jersey: To contract accounts purchasing at least one full compartment at a time by hose connections, on yearly purchases: From 2,500 to 100,000 gal., consumer tank-wagon price at time and place of delivery: 100,000 gal. per year, consumer tank-car price plus 0.5 cent per gallon. Consumer tank-wagon price generally will be equivalent to dealer tank-wagon price less 0.5 cent per gallon.

Effective January 16, 1939, in North Carolina the commercial consumer schedule became as follows: Single deliveries of 50 gal. or more, consumer tank-wagon price. Single deliveries of less than 50 gal., 4 cents per gallon over consumer tank-wagon price. Generally the posted consumer tank-wagon price will be equivalent to the dealer price, less 0.5 cent per gallon. The above policy also applies in South Carolina, effective January 23, 1939.

*Kerosene business of the company at these points now exclusively handled by dealers.

Pennsylvania and Delaware

ATLANTIC REFINING CO.

	Gasoline Cons'r tank car	Gasoline Dlr. tank wag.	Gasoline Inc. tax	Kero. tank wag.
Philadelphia, Pa.	14.0	15.0	5.5	10.15
Pittsburgh	14.5	15.5	5.5	10.5
Allentown	14.5	15.5	5.5	10.5
Erie	14.5	15.5	5.5	10.5
Scranton	14.5	15.5	5.5	10.5
Altoona	14.5	15.5	5.5	10.5
Dover, Del.	...	15.5	5.5	10.5
Wilmington	...	15.0	5.5	10.0

Price basis to undivided dealers, dealer tank-wagon price less 0.5 cent per gallon.

Discount on kerosene, 2 cents per gallon off tank-wagon price on tank-wagon deliveries of 25 gal. or more at one time.

Pacific Coast Territory

STANDARD OIL CO. OF CALIFORNIA

	Gasoline Tank truck*	Gasoline Serv. sta.	Gasoline Inc. tax	Kero. tank wag.
San Francisco	14.5	18.5	4.5	11.5
Los Angeles	14.0	18.0	4.5	10.0
Fresno, Calif.	15.5	19.5	4.5	12.5
Phoenix, Ariz.	18.5	22.5	6.5	12.5
Reno, Nev.	17.5	21.5	5.5	13.5
Portland, Ore.	17.0	21.0	6.5	13.5
Seattle, Wash.	17.0	21.0	6.5	13.5
Spokane	19.0	23.0	6.5	16.5
Tacoma	17.0	21.0	6.5	13.5

*Posted net tank-truck prices (including tax).

Resale and commercial discounts, effective October 1, 1941: Tank-car deliveries 0.25 cent a gallon off posted net tank truck. Commercial: Retail deliveries, and/or tank-truck deliveries of less than 40 gal., 4 cents per gallon above posted net tank-truck price for Standard Aviation, Standard's Supreme, and Standard Gasoline, and 3 cents per gallon above posted net tank truck for Flight Gasoline, except single deliveries of less than 40 gal. to marine trade only, which are billed at posted net tank-truck price.

Rocky Mountain District

CONTINENTAL OIL CO.

	Gasoline Tank wag.	Gasoline Inc. tax	Kero. tank wag.
Denver, Colo	14.5	5.5	11.0
Grand Junction	18.0	5.5	12.5
Pueblo	14.5	5.5	9.5
Casper, Wyo.	17.0	5.5	12.0
Cheyenne	16.0	5.5	11.5
Billings, Mont.	18.0	6.5	12.5
Butte	17.0	6.5	13.5
Great Falls	17.0	6.5	12.5
Helena	17.0	6.5	13.0
Salt Lake, Utah	18.5	6.5	14.5
Boise, Idaho	†20.1	6.5	16.5
Twin Falls	†21.1	6.5	17.0
Albuquerque, N. M.	*17.5	7.0	10.0
Roswell	*15.5	7.0	8.5
Santa Fe	‡18.0	7.5	10.0

*Includes city tax of 0.5 cent. †Includes toll-bridge tax of 1 mill. ‡Includes city tax of 1 cent.

Tank wagon represents price to consumers. Dealer represents price to dealers. If no dealer price is quoted, the tank-wagon price applies to all classes of trade.

Oklahoma and Arkansas

CONTINENTAL OIL CO.

	Gasoline Tank wag.	Gasoline Incl. tax	Kero. tank wag.
Texarkana, Ark.	14.0	5.5	6.0
Fort Smith	15.5	7.0	6.5
Little Rock	17.25	8.0	8.0
Muskogee, Okla.	15.0	7.0	8.0
Oklahoma City	15.0	7.0	8.0
Tulsa	15.0	7.0	8.0

Tank wagon represents price to consumers. If no dealer price is quoted, the tank-wagon price applies to all classes of trade.

Central South District

STANDARD OIL CO. OF LOUISIANA

	Gasoline Cons'r tank wag.	Gasoline Dlr. tank wag.	Gasoline Incl. tax	Kero. tank wag.
New Orleans, La.	17.25	17.75	8.5	‡10.5
Baton Rouge	17.25	17.50	8.5	‡10.5
Alexandria	17.25	17.50	8.5	‡10.5
Lafayette	17.50	18.00	8.5	‡10.0
Lake Charles	17.50	18.00	8.5	‡12.0
Shreveport	17.00	17.0	8.5	‡9.0
Knoxville, Tenn.	20.00	20.50	8.5	12.5
Memphis	17.25	17.75	8.5	10.5
Chattanooga	19.00	19.5	8.5	11.0
Nashville	19.00	19.5	8.5	10.0
Bristol	18.25	18.75	8.5	12.0

Esso at dealer price less 0.5 cent per gallon to undivided dealers.

‡Includes 1-cent state tax.

Price basis to commercial consumers throughout Louisiana, Arkansas, and Tennessee: On single deliveries of 50 gal. or more at a time—posted consumer tank-wagon price. On single deliveries of less than 50 gal. at a time—posted consumer tank-wagon price plus 4 cents per gallon. Generally, the posted consumer tank-wagon price is the same as the posted dealer tank-wagon price, less 0.5 cent per gallon.

New York and New England

SOCONY-VACUUM OIL CO., INC.

	Gasoline Comm. tank wag.	Gasoline Dlr.* tank wag.	Gasoline Inc. tax	Kero. tank wag.
Albany	14.2	14.7	5.5	7.7
Met. New York	14.4	14.9	5.5	8.0
Buffalo	14.5	15.0	5.5	8.3
Rochester	15.1	15.6	5.5	8.8
Syracuse	14.8	15.3	5.5	8.7
Portland, Me.	14.6	15.1	5.5	8.1
Manchester, N. H.	15.6	16.1	5.5	9.0
Burlington, Vt.	15.2	15.7	5.5	8.3
Boston, Mass	13.2	13.7	4.5	8.0
Worcester	13.8	14.3	4.5	8.1
Hartford, Conn.	13.9	14.4	4.5	7.6
New Haven	13.3	13.8	4.5	6.9
Providence, R. I.	13.3	13.8	4.5	7.8

*Undivided.

Effective August 8, 1940, the company changed its commercial consumer policy in New York and New England to the following:

Full compartment deliveries: Accounts buying less than 20,000 gal. annually, 0.5 cent above the commercial-consumer price; accounts buying from 20,000 to 120,000 gal. annually, commercial-consumer price; accounts buying 120,000 gal. annually and above, 0.25 cent off consumer price. Split compartment deliveries: Delivery of less than a full compartment, 250 gal., commercial-consumer price plus 1 cent. Steel-barrel deliveries: Commercial price plus 3 cents.

Nebraska

STANDARD OIL CO. OF NEBRASKA

	Gasoline Tank wag.	Gasoline Dlr.	Gasoline Incl. tax	Kero. tank wag.
Omaha	17.9	15.4	6.5	9.8
McCook	18.5	15.9	6.5	9.5
Norfolk	18.4	16.9	6.5	10.2
North Platte	17.5	16.4	6.5	10.7
Scottsbluff	18.9	16.0	6.5	9.5

Discounts to commercial consumers for tank-wagon deliveries covered only by standard commercial consumers contract, effective January 1, 1935.

Texas

	Gasoline Tank wag.	Gasoline Serv. sta.	Gasoline Incl. tax	Kero. tank wag.
Dallas, Tex.	14.0	17.0	5.5	7.0
Fort Worth	14.0	17.0	5.5	7.0
Houston	14.0	18.0	5.5	8.0
San Antonio	14.0	18.0	5.5	7.0

Naphtha

STANDARD OIL CO. (INDIANA)

	Tank wagon*
Oleum spirits	16.2
V.M.&P. naphtha	16.5
Cleaners' naphtha	15.5
Stanisol	15.5

*Prices include 3-cent Illinois tax but not 1-cent federal tax nor 2 per cent retail occupational tax.

Prices f.o.b. Chicago. Each price subject to discount of 1 cent per gallon for 150-gal. lots if covered by contract.

Canada

3-Star Imperial Gasoline
IMPERIAL OIL, LTD.

	Gasoline Tank wag.	Gasoline Incl. tax	Kero. tank wag.
Halifax, N. S.	29.5	13.0	19.0
St. John, N. B.	29.5	13.0	19.0
Montreal, Que.	28.0	11.0	17.5
Toronto, Ont.	28.5	11.0	18.0
Hamilton, Ont.	28.5	11.0	18.0
Winnipeg, Man.	30.5	10.0	22.5
Brandon, Man.	31.0	10.0	23.0
Regina, Sask.	28.0	10.0	20.0
Saskatoon, Sask	30.8	10.0	22.8
Edmonton, Alta.	28.9	10.0	20.9
Calgary, Alta.	26.0	10.0	18.0
Vancouver, B. C.	25.0	10.0	24.0

Tank-Wagon Changes

Standard Oil Co. of Nebraska reduced the dealer tank-wagon price of gasoline 1.3 cents per gallon at North Platte, Neb., effective November 14.

Standard Oil Co. of Louisiana advanced the dealer tank-wagon price of kerosene 0.5 cent per gallon November 19 at New Orleans, La.

Rate Review Asked

Inequitable freight rates are charged in petitions filed recently with the Interstate Commerce Commission by a number of farm cooperatives and independent petroleum dealers in the western trunk line territory, but no dates for hearings have been announced.

The attacks were occasioned when on November 5 the railroads modified their tariffs to where the maximum rate on low-grade oils would be the same as that on gasoline.

Petitions also attack the weights of certain of the low-grade oils, and state that the present weight of 7.4 lb. a gal. is antiquated and does not now represent the actual weight of these newer products. Petitioners seek an order that would require that these oils be billed at actual or estimated weights.

Independent refiners of the Mid-Continent are expected to aid the petitioners since most of the farm co-ops and the independent jobbers get their supplies from the independent plants. These refiners are supporters of the Petroleum Shippers' Association which less than a year ago gained a victory in the general revision of rail freight rates on petroleum from the Mid-Continent area to the vast consuming Middle West.

PRICES OF REFINED PRODUCTS...

All quotations f.o.b. plant in cars for interstate or export movement except as otherwise noted

Prices as of November 25, 1941
(Most prices in cents per gallon)

The quotations are exclusice of the federal excise taxes of 1.5 cents a gallon on gasoline and 4.5 cents a gallon on lubricating oils. Octane ratings in Middle West, Mid-Continent, and Southwest are based on A.S.T.M. method of testing.

Refinery Gasoline

OKLAHOMA (Group 3)—

U. S. Motor grades:		
72-74 octane (regular)	.06	.0625
63-66 octane	.05625	.05875
60 octane and below	.0525	.055
60-62 400 grades:		
72-74 octane (regular)	.06	.0625
63-66 octane	.05625	.05875
60 octane and below	.0525	.055

NORTH TEXAS—

U. S. Motor grades:		
72-74 octane (regular)	.05875	.06125
63-66 octane	.0550	.06
60 octane and below	.05125	.05375
60-62 400	.05	.06

NORTH LOUISIANA (Ark. and N. La. delivery)—

U. S. Motor grades:		
72-74 octane (regular)	.05875	.06125
63-66 octane	.0550	.05875
60 octane and below	.05	.06

ARKANSAS (Ark. and N. La. del.)—

U. S. Motor grades:		
72-74 octane (regular)	.05875	.06125
60 octane and below	.05	.05375

CHICAGO (Based on Group 3)—

U. S. Motor grades:		
72-74 octane (regular)	.06	.0625
63-66 octane	.05625	.05875
60 octane and below	.0525	.055
60-62 400 grades:		
72-74 octane (regular)	.06	.0625
63-66 octane	.05625	.05875
60 octane and below	.0525	.055

PENNSYLVANIA (inland refineries)—

74-76 octane (regular)	.0750	.0775
80 octane (1939 Research)		.0800

CALIFORNIA (domestic movement)—

58-60 400, 65 oct. and higher	.065	.0725
54-58 U. S. Motor	.055	.0625

EAST COAST (domestic)—

U. S. Motor (minimum 72 octane):		
New York (Bayonne)*	.08	.085
Philadelphia	.08	.0825
Boston		.085
Baltimore	.0775	.0825
Charleston, S. C.	.0725	.0775

*All grades of gasoline ½ to ¾ cent less for barge shipments. New York Harbor prices are for New York and New England delivery. Prices for New Jersey delivery ¼ cent lower.

GULF COAST (domestic)—

U. S. Motor grades:		
80 plus (research)	.06625	.0675
72-74 octane (leaded)	.0625	.06375
70-72 octane (unleaded)	.0625	.0650
68-70 octane (unleaded)	.0625	.0650

Natural Gasoline

OKLAHOMA (Group 3)—

Grade 26-70		.05125
Grade 18-55	.06125	.0625

NORTH TEXAS—

Grade 26-70		.0475
Grade 18-55	.05625	.0575

CALIFORNIA—

75-85 375-390	.045	.05

NORTH LOUISIANA (Ark. and N. La. delivery)—

Grade 26-70		.0475

Tractor Fuel

OKLAHOMA (Group 3)—

40-42 gr., 315-325 i.b.p. 110-flash, 540-550 e.p.	.0375	.03875
41-43 gr., 300-320 i.b.p. 110-125 flash, 500-520 e.p.	.03875	.04
46-48 gr., 210-230 i.b.p. 480 max., e.p.	.04125	.0425

Kerosene

(All kerosene water white)

OKLAHOMA (Group 3)—

42-44	.0450	.0475
41-43	.04375	.04625

NORTH TEXAS—

41-43	.0425	.04625

NORTH LOUISIANA (Ark. and N. La. delivery)—

41-43	.04375	.04625

ARKANSAS (Ark. and N. La. del.)—

41-43	.04375	.04625

PENNSYLVANIA (inland refineries)—

46	.0625	.0650
45	.0625	.06375

CHICAGO (Based on Group 3)—

42-44	.0450	.0475
41-43	.04375	.04625

CALIFORNIA (Pac. Coast market)—

38-40 high-burning test	.045	.055

NEW YORK (Bayonne, N. J.)—

41-43		.053

GULF COAST (domestic)*—

41-43	.04	.04125

*Barge price ⅛ cent lower.

Furnace Oil

OKLAHOMA (Group 3)—

Range oil	.04	.0425
No. 1 white (38-42)	.03875	.04125
No. 2 straw (32-36)	.03625	.03875
No. 3 zero to 10 (28-32)	.035	.0375

NORTH TEXAS—

No. 1 white (38-42)	.03825	.04125

NORTH LOUISIANA (Ark. and N. La. delivery)—

No. 2 (32-36)	.0325	.035

ARKANSAS (Ark. and N. La. del.)—

No. 2, 32-36	.0325	.035

CHICAGO (Based on Group 3)—

Range oil	.04	.0425
No. 1 white (38-42)	.03875	.04125
No. 2 straw (32-36)	.03625	.03875
No. 3 zero to 10 (28-32)	.035	.0375

NEW YORK (Bayonne, N. J.)—

*No. 1		.053
*No. 2		.052
*No. 3		.052

*Barge deliveries ⅛ to ¼ cent under above tank-car price.

Gas Oil and Fuel Oil

(Gas oil per gal., fuel oil per bbl.)

OKLAHOMA (Group 3)—

No. 5, low pour point (18-22)	.85	.90
No. 6, 15 and above (10-16)	.85	.90

NORTH TEXAS—

No. 5, low pour point (18-22)	.80	.85
No. 6, 15 and above (10-16)	.80	.85

NORTH LOUISIANA (Ark. and N. La. delivery)—

10-14 fuel oil, industrial	.80	.85

CHICAGO (Based on Group 3)—

No. 5, low pour point (18-22)	.85	.90
No. 5, 15 and above (18-22)	.85	.90
No. 6, low pour point (10-16)	.85	.90
No. 6, 15 and above (10-16)	.85	.90

PENNSYLVANIA (inland refineries)—

36-40	.055	.06

CALIFORNIA—

Los Angeles:		
30-40 gas oil, per bbl.	1.10	1.25
24 plus diesel, per bbl.	1.10	1.25
24 plus diesel (bunkers)	1.20	1.35
12-16 (bunkers at tidewater)	.75	.85
10-16 (cargo lots)	.75	.85
12-17 (tank cars)	.65	.75
10-17 (high sulfur)	.55	.65
San Joaquin Valley:		
10-18 (tank cars)	.70	.85
24 plus diesel, per bbl.	1.10	1.25
San Francisco:		
24 plus diesel, per bbl.	1.35	1.40
24 plus diesel (bunkers)	1.40	1.50
10-16 (bunkers)	.80	.85

GULF COAST—

No. 2 fuel		.04
43-47 diesel		.04125
48-52 diesel	.04125	.0425
53-57 diesel		.0425
58-and-above diesel	.0425	.04375
Diesel bunkers		1.45
Bunker C (bulk cargoes)	.85	.90
Bunker C (bunkers)	.85	.90

NEW YORK (Bayonne, N. J.)—

27 plus, gas oil		.053
28-30 diesel (lighterage 6¼c per bbl.)		.052
28-30 diesel (tank cars)		.052
Bunker C (to ocean-going ships in N. Y. Harbor)	1.35	1.45
Industrial fuel (tank cars)		.044

Lighterage charge 5c bbl. additional.

Bright and Steam Refined

OKLAHOMA (Group 3)—

200-210 D, 10-25		.27
150-160 D, 0-10		.23
150-160 D, 10-25		.225
120-125 D, 0-10		.225
120-125 D, 10-25		.22
Steam refined:		
600 dark green (untreated)		.145

PENNSYLVANIA—

Bright Stocks (Pennsylvania Grade No. 8 color, 140-150 at 210, 545-550 flash):		
10 pour point		.305
15 pour point		.295
25 pour point	.25	.28
Steam refined:		
600	.15	.16
650	.155	.165
600 flash	.16	.175
630 flash	.17	.18

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—

0-10 pour point:		
150-3		.145
180-3		.15
200-3		.15
250-3		.165
280-3		.175
280-4		.17
300-3		.185
350-3½		.19
400-3½		.20
500-3½		.205
600-3½		.21
100-2½ paraffin oil 10-25		.0825
10-25 pour point:		
200-3		.145
250-3		.16
280-3		.17
280-4		.165

CALIFORNIA (moving to dom. mkt.)—

Pale oils:		
200-2½-3	.07	.0775
300-2½-3	.07	.0775
400-3-4	.0725	.08
450-3-4	.0725	.08
550-3-4	.0875	.1075
600-3-4	.0875	.11
Red oils:		
200-4-5	.07	.0775
300-5-6	.0725	.08
350-5-6	.09	.11
400-5-6	.09	.11
450-5-6	.09	.1125
500-5-6	.0925	.1125
600-5-6½	.0925	.1125
700-6½ plus	.0925	.1125
750-6½ plus	.0925	.1125
900-6½ plus	.0925	.1125

GULF COAST—

Pale oils:		
100-3	.0625	.0650
200-3	.0850	.0875
300-3	.09	.0925
500-3½	.0975	.10
750-3½	.10	.1025
1,200-3½	.1025	.10375
2,000-4	.1050	.1075
3,000-4	.1225	.1250

PENNSYLVANIA—

150 vis. at 70° F., 3 color, 400-405 flash:		
Zero pour point		.385
10 pour point		.375
15 pour point		.365
25 pour point		.31
200 vis., at 70° F., 3 color:		
Zero pour point		.405
10 pour point		.395
15 pour point		.385
25 pour point		.33

Wax and Petrolatum

(Prices per pound)

OKLAHOMA (Group 3)—

124-126 (A.m.p.) w.c. scale		.06

PENNSYLVANIA (inland refineries)—

122-124 (A.m.p.) w.c. scale		.0625
124-126 (A.m.p.) w.c. scale		.0625

NEW YORK—

Wax in bags fully refined:		
125-127 (A.m.p.) wax	.0560	.0640
128-130 (A.m.p.) wax	.0560	.0660
130-132 (A.m.p.) wax		.0585
133-135 (A.m.p.) wax		.0615
135-137 (A.m.p.) wax		.0640
Crude scale:		
124-126 (A.m.p.) w.s.		.061
124-126 (A.m.p.) y.s.		.061
Petrolatum in barrels, carload lots:		
Dark green		.02875
Amber	.02875	.03125
Extra amber	.03125	.03375
Lily white	.04875	.05375
Snow white	.05625	.05750
Cream	.04125	.05250

Export Prices

GASOLINE

GULF COAST—

60-62 400	.0550	.0675
61-63 390	.0575	.0650
64-66 375	.0575	.0650

LOS ANGELES—

U. S. Motor grades:		
Above 60 octane	.06	.0625
65-69 octane	.0575	.06
60-65 octane	.0525	.055

KEROSENE

GULF COAST—

41-43 water white	.0375	.04

LOS ANGELES—

41-43 water white	.05	.0525

LUBRICANTS

(Pennsylvania Grade)

NEW YORK (f.a.s. in bbl.)—

Cylinder stocks:		
600 S. R. unfiltered		.265
630 S.R. unfiltered		.27
600 flash, S.R.		.265
650 flash, S.R.		.27
Bright stock:		
Light, 25 pour point	.36	.37

NEUTRAL OIL

200-3 color	.43	.50
150-3 color	.41	.46

PARAFFIN WAX

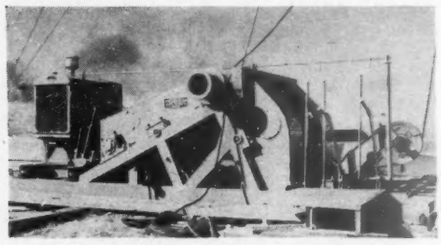
NEW YORK (prices per bbl.)—

123-125 A.m.p.	.0560	.0625
125-127 A.m.p.	.0560	.0625
128-130 A.m.p.	.0585	.0650
133-135 A.m.p.	.0615	.0700
135-137 A.m.p.	.0640	.0700
Crude scale:		
124-126 w.s.		.061
124-126 y.s.		.061

EQUIPMENT PROGRESS...

O.C.S. Builds Workover Rig With Unusual Feature

A unit of entirely different design built to work equally as well as a cable tool or a rotary workover rig and utilizing the principle and flexibility of a steam-driven machine has been perfected in the new O.C.S. workover rig. In fact it can be changed from a cable-tool workover rig to a rotary workover rig within 30 minutes and vice versa.



O.C.S. workover rig showing control side

For cable-tool work the machine is designed for drilling, spudding, swabbing, and bailing operations. For rotary work it is designed to do anything that might be necessary. The Oil Country Specialties Manufacturing Co. of Coffeyville, Kans., claims the new workover rig is in response to requests of customers for a different kind of rig that would operate like a steam unit and be equipped with all friction clutches and minimum center of weight.

Speed flexibility against varying weight and load conditions is a feature of the workover rig. By the use of a twin disk torque converter, the line speeds increase as load decreases, thus permitting speed to be automatically increased as much as 5 to 1 without changing ratio. Likewise, the pull can be increased in any given speed by as much as 5 to 1 without changing ratio.

Speed can be changed, it is claimed, without shutting down. The operator merely goes from high to low on the hoist drum by throwing out one friction clutch and throwing in the other. The unit has no gear box or strip. Even the sand reel of the workover rig has two speeds.

Marmon-Herrington Trucks Replace Oxcarts in Bolivia

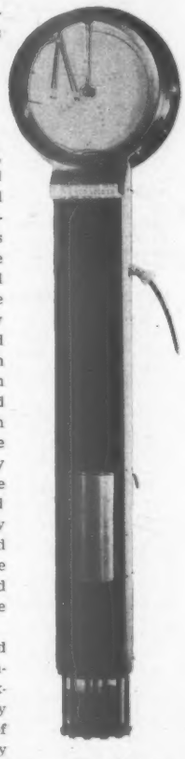
From the oxcart to a modern all-wheel-drive truck is a pretty long jump, but nothing in between could do the job, according to Gordon Barbour, president of the Barvia Co. of La Paz, Bolivia. Mr. Barbour owns gold and oil properties far back in the interior of Bolivia where the only roads are oxcart trails over mountain, marsh, and plain.

As a result of experience with a previous purchase of a Marmon-Herrington light delivery all-wheel-drive converted Ford, Mr. Barbour was convinced that a similar vehicle with much larger tires and other special features would be exactly what he needed to conduct geological surveys over his properties.

A vehicle finally was developed for Mr. Barbour's use. It presents a rather weird appearance, but from tests made locally, there is no question but that it will render the service expected. The truck has already been shipped and Mr. Barbour is on his way back to Bolivia to put it into immediate service.

Martin-Decker Mud Logger Charts Weight and Viscosity

Martin-Decker Corp., Long Beach, Calif., has recently announced development of an instrument that provides a clear, continuous record of mud weight and viscosity while drilling. Known as the Martin-Decker mud logger, it permits direct readings of these two important factors to be made at all times, thus enabling complete control of mud condition to be maintained continuously.



To obtain viscosity readings, the mud logger uses a method that is simple, practical, and highly accurate. Since the absolute viscosity of a fluid is its internal resistance to shear, the unit was designed to make full use of this shear principle. The instrument consists essentially of (1) a sturdy, constant-speed induction motor suspended on roller bearings and free to turn radially; (2) a rotor connected to the motor armature through a steel shaft, and (3) a simple two-pen recorder actuated by movements of the motor. The solid metal rotor is enclosed within a cage of stationary vanes. The unit is suspended over the mud ditch with the rotor submerged into the mud stream. There is no interference with uniform mud flow.

As the rotor shears the mud between its surface and the stationary vanes, the torque exerted by the rotor is directly proportional to the viscosity of the fluid. Thus, the tendency of the suspended motor housing to turn with the armature or rotor gives a measure of the torque on the rotor. This torque measurement is calibrated in units of viscosity (centipoises) and direct records of mud viscosity are thus obtained. These records can be used for viscosity comparisons of all weights of mud.

A record of mud weight is also obtained by the rotor. Since the rotor is free to move up or down a short distance, it will "float" at a level dependent upon the buoyant effect, or weight, of the mud passing across the rotor. Positions of the rotor are calibrated in pounds per cubic foot of mud weight, enabling a continuous record of this factor to be penned on the chart.

As an aid to drilling safety, speed, and efficiency, the mud logger offers outstanding advantages. Channeling—frequently a forerunner of stuck drill pipe—can be detected with the instrument simply by noting changes in the circulating period. Changes in mud weight make detection of water loss a simple matter, and afford a check on filter-cake efficiency. Where mud weight is a vital factor—as when gas is encountered—the disastrous hazard of undetected weight changes can be avoided.

OIL-FIELD EQUIPMENT SPEEDS AUSTRALIAN AQUEDUCT

Australia, which has oil production of only a few hundred barrels a day, was making pipe-line news last week with familiar United States oil-country equipment. The big pipe-line project was not for oil, however, but was to carry water from the Murray River at Morgan 240 miles away to Whyalla. It was hailed as the greatest engineering project yet undertaken in South Australia.

Seven miles of the main is already complete or nearing completion between Robertstown and Spalding and the pipe-line gang is laying 3F lengths of 30-in. pipe a day. An Australian newspaper, describing the operation, stated:

"The pipes, about 2 tons in weight, are hauled like featherweights by tractor cranes, and are placed approximately in position on wooden platforms. Then three are welded together by portable oxyacetylene plants, and accurately aligned to a fraction of an inch by the cranes.

"They are chocked in that position, and then welded to the continuance of the line. At 15-ft. intervals concrete chairs, the moulds all of standard pattern, are built under the line with a massive anchor of reinforced concrete at every 200 ft. or at curves in the line."

The line is being built above ground, since "oxy-welding" has made it unnecessary for lead-filled joints to be supported by earth pressure, and construction is proceeding ahead of schedule. Confidence was expressed that it would be completed considerably before the 3-year construction time allotted. Photographs of the work show equipment familiar to the oil country in the United States in use.

A Cardwell tractor crane is shown here in operation on the 240-mile South Australian water pipe-line project between Morgan and Whyalla

TRADE LITERATURE

AIR REDUCTION, 60 East Forty-second Street, New York, N. Y.—A 55-page book, "Welding Procedures." It gives the reader the full benefit of Air Reduction's long experience in oxyacetylene and electric arc welding, brazing, etc., and in addition to recommending process, the book recommends the best filler metals to

be used for each process, and describes specialized welding techniques not commonly known. In an appendix, data is given for the calculation of electrode and gas welding rod consumption for different types of welds; also comparative welding record sheets for tabulating data that will determine the best welding method for a particular job.

CLARK BROS. CO., Olean, N. Y.—Bulletin 200-73 on the new Clark Angle steam-engine-driven compressor, designed particularly for engineers and those using such equipment.

ELASTIC STOP NUT CORP., 2330 Vauxhall Road, Union, N. J.—A newly revised general catalog of Elastic stop nuts and aircraft fittings which is now completely up-to-date in every respect.

POMONA PUMP CO., 206 East Commercial Street, Pomona, Calif.—A booklet showing Pomona industrial pumps and how they can be adapted to a wide range of uses. This brochure contains not only a profusion of illustrated case histories of varied applications, but also presents many practical drawings.

BRISTOL CO., Waterbury, Conn.—Bulletin 585, containing a condensed index of the products manufactured by the company and of its engineering services. It covers air-operated and electrically operated automatic-control instruments, recording and indicating instruments, and telemetering instruments for recording and remote automatic control.

Westinghouse Offers New Switchboard Lamp

For general indicating or signal purposes on switchboards, control desks, and panel boards, a new indicating lamp is announced by Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa. Known as the Minalite, the lamp has a rectangular-shaped lens designed for extreme angular visibility. Receptacle is made of one-piece molded material and is suitable for mounting on panels $\frac{1}{16}$ to 2 in. thick. Resistors as part of the unit are used for line voltage ratings between 50 and 250 volts.

Pressure type leaf spring contacts establish connections with the slide base telephone lamp having a rating of 0.032 to 0.038 amp., 24 volts. The rectangular lens assembly is held in place by steel spring clips engaging in retaining grooves of the receptacle. A chromium metal holder encases the lens and spring clips. Terminals of standard 10-32 hardware are easily accessible in the rear.

Spectacle-Type Goggle Has Comfort-Bridge

Something radically new in the direction of making spectacle-type goggles easier and more comfortable to wear, is claimed for the new "comfort-bridge" feature

announced by the Chicago Eye Shield Co., 2310 Warren Boulevard, Chicago, Ill. The bridge is described as a single unit, molded out of nonflammable plastic material including wide bearing jumbo pads which distribute the weight evenly and float the frame without undue pressure across the bridge of the wearer's nose. Designed for flexibility, both the bridge and pads become self-adjusting to varying nose widths.

The frame of the new "comfort-bridge" spectacle is of light weight design, yet retains every element of strength. The arch bridge is high and engages the eye wires at four different points by means of forked ends, thereby gaining double the strength and rigidity obtained when only two points are engaged.

Kellogg First to Be Given Rating Under New Plan

The Kellogg Switchboard & Supply Co., of Chicago, Ill., is the first telephone manufacturer to be granted the privilege of operating under the new defense supplies rating plan of the OPM, in which the Government has recently recognized the importance of speeding up the communication industry for national defense.

This permits the purchase of material in advance so that telephones and accessories can be manufactured to meet the enlarged needs of national defense. This means that a company like Kellogg may predicate its advance purchases of raw material on the volume of government business of the previous month.

Operation under this plan considerably facilitates serving civilian customers by keeping the assembly lines intact and by enabling them to keep skilled telephone workers busy on telephone products.

AMONG EQUIPMENT MEN...

NEW YORK NOMADS ACCEPT FIRST HONORARY MEMBER

Barton A. Myers, first honorary member of the New York chapter of Nomads, is shown here holding his membership certificate. In the group, left to right, are J. A. Clark; Russell D. Heath, vice president New York chapter; B. A. Warren; Mr. Myers; Morgan Walker; Val R. Wittick, New York export representative; F. T. Ostrander, National Supply Co., New York, and James A. Thomas, president New York chapter

At the November meeting of the New York chapter of Nomads, Barton A. Myers, director of International Petroleum Co. of Toronto, Ont., Canada, received his membership certificate as the first honorary member of the New York chapter. The meeting was held November 12 at the Waldorf-Astoria Hotel and was attended by approximately 60 members and guests.

Mr. Myers presented a talk on "Canada at War," in which he outlined the military and civilian efforts made by that country since they formally entered the war in September 1940.

Guests included R. E. Moriarty and B. A. Warren, Standard Oil Co. of New Jersey, New York City; F. W. Floyd, Lago Petroleum Corp., Venezuela; D. T. O'Connor, Bahrein Petroleum Co.; M. O. Smith, A. M. Thornton, U.B.O.T., Trinidad; E. L. Pragst, Basil Zavoico; Barton A. Myers, International Petroleum Co., Toronto; C. Stamfield, E. K. Engels, and George W. Knoth, California-Texas Oil Co.; William Brown and J. A. Clark, Lago Petroleum Corp., Venezuela; Morgan Walker, Standard Oil Co. of New Jersey, New York City, and C. P. MacDonald and E. H. Sheahan.

C. J. Coberly Elected Director Of Consolidated Steel Corp.

Clarence J. Coberly, president of Kobe, Inc., was elected a director of Consolidated Steel Corp., Ltd., at a recent meeting of the board of directors. Mr. Coberly will fill the vacancy which occurred on the death of Donald G. Henderson.

Mr. Coberly, long prominent in the engineering field, is well known to southern California business men. He was graduated from Stanford University in 1915, and for 3 years he was engaged in oil-well tool manufacturing. Early in 1918, he became identified with the California Compressed Gas Co. in charge of engineering, and it was he who designed and perfected the well-known "Purox" equipment.

With the development of the Signal Hill, Santa Fe Springs, Torrance, and Baldwin Hills oil wells, Mr. Coberly recognized the need for scientifically engineered well screen. His research along this line resulted in the invention of the Kobe process and pipe slotting equipment, now covered by more than 40 United States and foreign patents. Kobe, Inc., was formed in September 1923, and the company derived its name from the nickname by which Mr. Coberly has always been known.

Change in South Chester Tube Co. Personnel Is Announced

Robert B. Wolcott has been appointed manager of sales of the New York office of South Chester Tube Co. Mr. Wolcott has been a sales representative with the South Chester Tube Co. in New York for over 15 years and has a wide acquaintance in the oil industry.

Main offices of the company are in Chester, Pa.

Spang Chalfant Names West Coast Manager

Spang Chalfant, Inc., has announced the appointment of Frank W. Morris as manager of sales, West Coast territory, effective November 10. He succeeds J. V. Greer, resigned.

Mr. Morris' headquarters will be in the Ohio Oil Building, Los Angeles, Calif. Mr. Morris has been associated with the Spang Chalfant sales organization for a number of years and just recently was manager of sales for the Dayton pipe coupling division of National Supply Co. in Pittsburgh, Pa.

Houston Nomads Hear Talk On Problems in Venezuela

Robert Russell of the Texas Co., Caracas, Venezuela, was guest of honor at a luncheon meeting of the Houston chapter of Nomads, Tuesday, November 18. In a brief talk he outlined some of the problems confronting an oil man in that territory today. Other guests included J. C. Van de Berg of Shell Oil Co., Inc., and C. F. Bedford of Stanolind Oil & Gas Co.

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FOR SALE; Lease or Exchange, (100) acres Liberty Co., Texas. Mr. Juelfs, 317 W. Duval St., Jacksonville, Fla.

APPROXIMATELY 160-acre tract parts of Sec. 17-20-2N-1E in Richland County Illinois available for leasing for immediate development, near fields now in production. Communicate S. M. Friedlander, Atty. at Law, Peoria, Ill.

LINN CO. KANSAS
500 acres; shallow production; fully equipped. Sell or let operations on percentage. For particulars, Mabes & Co., K. C. Mo.

FOR LEASE, 150,000 acres in Tennessee Coal Basin on America's largest timbered plateau, part of Appalachian coal, oil and gas field. Oil being produced here now from shallow wells. Stanolind and Benedum & Trees have leases here. G. E. Harrison, Crossville, Tennessee.

CHEAP CRANE COUNTY Sec. 18, B28, under Magnolia-Stanolind leases. Jefferson G. Smith, 215 Littlefield Bldg., Austin, Tex.

FOR SALE: 50-acre lease, John English survey, Joaquin area, Shelby County, in line for new shallow production, also deep pay. Drilling now under way. Price $10 per acre. Write for information. C. A. Parker, Box 451, Center, Texas.

EAST TEXAS Woodbine-Trinity sand wildcats starting. If you have some money and will exercise little common sense and judgment chance you might pick up 10 to 50 for one. E. CROFT, PROCTOR, TEX.

I KNOW acreage in Western Kans. on good Geology. Open for development. Can furnish drilling Block to Parties who mean Business. Also have for sale interest in acreage to be drilled soon offsetting Production; and some good Royalties. Can furnish satisfactory references. H. R. OWENS, Utica, Kans.

OIL LEASE: Have 125 acres Woodson County, Kansas, oil lease. 80 acres will produce—field bounded. Three producing gas wells in Bartlesville at 1162. Top of Mississippi Lime at 1200', oil at 1205'. I drilled into this strata and produced oil. Have drilling machine on lease, tubing, casing, oil tanks, gun barrel, etc. If you can match up my investment you can have 50%. Write for full details. E. B. Jaeger, 3702 W. 3rd St., Los Angeles, Calif.

FOR LEASE in Yoakum County, Texas, 40, 80, or 160 acres close to production; SE¼ of Section 822, Blk. D; John H. Gibson survey. C. C. Beebe, Route 2, Box 134-A, Okmulgee, Okla., or Paul R. Beebe, Bennett, New Mexico.

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Situations Wanted

REFINERY ENGINEER AND TECHNOLOGIST with fifteen years' experience, B.S. degree, age 36. Experience covers design of crude and cracking plants, design, construction and operation of vacuum lube plants, tubular heaters, pilot distillation and solvent treating units, also patent work and cost engineering. Box A-740, The Oil and Gas Journal, Tulsa, Okla.

ATTENTION MR. PRODUCER
If you need the services of a sober, reliable, married man, with 20 yrs. experience in the petroleum industry, 8 yrs. with present employer, then please contact me by wiring or writing Box A-760, The Oil and Gas Journal, Tulsa, Okla.

Help Wanted

DESIGNERS for oil refinery piping, also structural and concrete. Must be thoroughly experienced this class of work. State fully first letter salary desired, complete detail of your experience, age and when services available. Arthur G. McKee & Company, 2300 Chester Avenue, Cleveland, Ohio.

GOOD salaried position open with responsible oil company for expert male stenographer who also has oil experience and ability in purchasing and selling leases and handling drilling blocks. Must have good acquaintance among industry. Apply P.O. Box 1583, Ft. Worth, Texas.

PURCHASING AGENT—Midwest Chain Operator wants Purchasing Agent—Heating Oils — Motor Oils — Gasolines — For Highway — Water and Rail Terminal Facilities. Box A-751, The Oil and Gas Journal, Tulsa, Okla.

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FOR SALE OR TRADE—One Refinery in the heart of Kansas oil field. Trade for Ranch or sell for cash. Box A-753, The Oil and Gas Journal, Tulsa. Okla.

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LOANS made on producing oil, gas and mineral lands. New York Note & Share Corp., 109 Broad St., New York City.

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Mailing Lists

ROYALTY owners, Oil investors, Unit holders, Stockholders, Operating personnel of oil industry. Oil Industry Mailing List Co., Tulsa Loan Bldg., Tulsa, Okla.

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WANT TO BUY 94 ft. A.P.I. Drilling Derricks. Melton Supply Company, P. O. Box 1360, Seminole, Oklahoma.

For Sale—Equipment

FOR SALE: 1-T20 crawler type McCormick Deering Tractor in first class condition; 1—W30 McCormick Deering Tractor on steel in first class condition; 1—10 x 4¼ x 10 Chicago Pneumatic Compressor overhauled; 1—8 x 8 Ingersoll Rand Compressor overhauled. Williams Supply Co., Bartlesville, Okla.

FOR SALE: Direct to operators for cash. No brokers. Casing, line pipe, fittings, tubing, rods, tanks, pull machines, powers, service masts, engines. C. T. Boone, Emporia, Kansas.

FOR SALE
At Burrton, Kansas
122' Rotary Derrick, drilled one well A-#1 condition; also one vertical 160 H.P. Hope Gas Engine Compressor now operating, size 14¾" x 16", excellent condition, complete with starting jack and tanks. Priced to sell. Address:
P. O. BOX #390
Blackwell, Oklahoma

FOR SALE at Oklahoma City: Large quantity 65, 70, 75 and 85 hp. oil field boilers, repaired and unrepaired. Cities Service Oil Co., Bartlesville, Okla.

MATERIAL—STOCK—AIR PLANT
Priced to sell—all or any part
1—Take off Pulley Miller Gas Engine to Overhead Line Shaft
1—165 HP Miller Gas Engine
1—Burt-Cross Air Filter
1—2½" x 14' Overhead Line Shaft Comp.
1—5½" x 2½" Air Tank
1—Wakesha Motor Radiator Frame
1—"10" Ingersoll-Rand Compressor
1—Manzel Lubricator
2—Blaw-Knox Tracifiers 3"
2—10½ x 4¾ x 12 Worthington Compressors.
2—Manzel Lubricators
1—Air Pump
1—5' x 5' Scrubber Tank
1—2" Nelan-Sch Gas Regulator
1—2" CF HP Gas Regulator
2—2' x 5' Making Tanks
1—80' x 30' Steel Frame Building. Located Seminole, Okla.
BOGE IRON & METAL CO.
800 S. St. Francis Ave., Wichita, Kansas

GASOLINE STORAGE TANKS
Steel riveted horizontal — 7' x 30'
GILBERT PIPE & SUPPLY CO.
Electra. Tex.

3—100 HP Continental Boilers
2—66 HP Lucey Boilers, A-1 condition
3—Complete Power Rigs
Several rebuilt engines.
K. S. RICHARDS
Box 443 Phone 3-5600 Fort Worth, Tex.

CLASSIFIED ADVERTISING RATES

Classified advertising rates: First insertion, 35 cents a line; each additional insertion, 25 cents a line, PAYABLE IN ADVANCE. Six words usually make a line. Count as a word each one-letter word and each group of figures. White-space computed at regular line rate. Allow two extra lines for blind ads. Ads of less than three lines not accepted. No formal acknowledgment is made, and proofs cannot be shown in advance of publication.

	1 time	2 times	3 times	4 times		1 time	2 times	3 times	4 times
3 Lines	$1.05	$1.80	$2.55	$3.30	7 Lines	$2.45	$4.20	$5.95	$7.70
4 Lines	1.40	2.40	3.40	4.40	8 Lines	2.80	4.80	6.80	8.80
5 Lines	1.75	3.00	4.25	5.50	9 Lines	3.15	5.40	7.65	9.90
6 Lines	2.10	3.60	5.10	6.60	10 Lines	3.50	6.00	8.50	11.00

CLASSIFIED DISPLAY RATES

Classified Display is set with a border and may be used in one or two column sizes.

1 Inch	1 time	$5.00
1 Inch	13 times	4.50 per inch
1 Inch	26 times	4.00 per inch
1 Inch	52 times	3.50 per inch

This space may be contracted for over a period of one year from the date of the first insertion and is PAYABLE IN ADVANCE, MONTHLY.

We reserve the right to withhold all advertising of questionable character. To avoid delay be sure to send remittance with copy. We will set your ad in the smallest amount of space possible and refund all overpayments. One-time insertions will not be run until fully paid. Forms close MONDAY NOON before each issue date.

THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

CLASSIFIED ADVERTISING . . .

For Sale—Equipment | For Sale—Equipment | For Sale—Equipment | For Sale—Equipment

OFFERED FOR SALE—HURRICANE REFINERY—OVERTON, TEXAS

4500 Bbl. Crude Topping Furnace—77—4" OD by 3" ID Tubes—20' Long

Bubble Tower—6' Dia. by 47' High—13 Trays—15—18" Manways

2—150 H.P. Boilers—125 Lb. Pressure—Pumps—Motors—Vessels

SONKEN-GALAMBA SUPPLY COMPANY

W. C. Berry or H. J. Galamba
Riverview at Second, Kansas City, Kansas

Robt. W. Duden
2100 S. Union, Tulsa, Oklahoma

FOR SALE: 1—F-M 4" Centrifugal Pump and 10 h.p. 1200 rpm. motor. One Viking ET 4" high pressure rotary pump with 2¾ to 1 speed reducing gear. One 4" Worthington high pressure rotary pump. Miscellaneous lot pumps and electric motors with starters. One Kinney Model SD 866 rotary pump, 6" connections, on base plate with extended shaft, outboard bearing and tight pulley. Priced to sell.
CORKEN PUMP & MACHINERY CO.
206 E. Grand Ave., Oklahoma City, Okla.

25 K.W. and 40 K.W. Gas Engines, 220 volts. D.C. Two 100 K.W. Gas Engine-Generator Sets, 220 volts, D.C. 7x6 Ingersoll-Rand ER-1 Air Compressor. Six-inch Oster Pipe Threading Machine. Also large stock of lathes, pipe machines, milling machines, etc. Send for our list.
Terms to suit.
CINCINNATI MACHINERY & SUPPLY CO.
26 West 2nd St.. Cincinnati, Ohio

TRACTORS
Caterpillars, crawler type, size "35" $395; size "65" with nigger head winch $795.00; Austin Western hydraulic grader 10' blade $650. O. C. Evans, Mt. Sterling, Kentucky.

FOR SALE at Oklahoma City: A quantity of repaired and unrepaired duplex piston steam pumps, 6 x 4 x 6 and 10 x 3½ or 4½ x 10. Cities Service Oil Co., Bartlesville, Okla.

FOR SALE: 125 H.P. 200 W.P. Broderick Boiler, Code Condition, $975. Melton Supply Co., Seminole, Okla.

FOR SALE OR RENT—Air Compressors, Sandblasting Machines, Sand Dryers, Sandblasting Hose, Paint Hose, Pots, Guns, etc. of defunct oil field painting company. Wire or write E. F. Gibbons, 1st Natl. Bank Bldg., Houston, Texas.

FOR SALE: 6" Standard Blind, 6 and 8" extra heavy screw CI Companion Flanges. Patridge, Cities Service Oil Company, Bartlesville, Okla.

ENGINES
3—Bessemer Direct Driven Gas Engines, 80 H.P., Type X, rebuilt with rebored power cylinders. Can furnish with 7½", 13½", 15", 16", 16½", 17", or 18" Compressor cylinders, $1800.00, or with new 17" power cylinders $2250.00 f.o.b. Tulsa, Okla.

W. S. SMITH
523 Thompson Bldg. Phone 2-5473
Tulsa, Okla.

FOR SALE
2—7" x 18" Wilson-Snyder power pump, Timken bearings throughout. Steel mud ends. Mechanically perfect.
1—6" x 12" Gardner power pump, fine shape.
1—6" x 14" Lucy power pump, ready to go.
See us for derricks.
A. & A. Tool & Supply Co., LD-70022, Oklahoma City, Oklahoma.

FOR SALE: 5 x 12 Oil Well Power Slush Pump with 100 H.P. Waukesha Motor. Melton Supply Co., Seminole, Okla.

300 AMP. Westinghouse portable arc welder, excellent condition. Priced for quick sale. Box 328, Phone 3537, Shawnee, Okla.

USED Storage Tanks, 6000 to 13,000 gallon capacity. Write Box 284, Tulsa, Oklahoma, or phone 4-6729.

LIQUIDATING

RODESSA REFINERY
SHREVEPORT, LA.

AVAILABLE IMMEDIATE DELIVERY

This refinery contains the most modern Cracking, Topping, Butane, Naphtha, Stabilization, Absorption, and Clay Treating Units. In 1938 nearly the entire plant was rebuilt and modernized which included refinery equipment of latest design for High Pressure processing. After new installations were completed, this plant operated only a short time. Careful inspection has shown nearly all units in good operating condition. This property should not be confused with ordinary abandoned or obsolete refineries. Cracking capacity, 6,000 barrels; total processing, nearly 12,000 barrels. Storage tank capacity, over 650,000 barrels. Write for complete detailed inventory.

BROWN-STRAUSS CORPORATION

AT (CEDAR GROVE) SHREVEPORT, LA.
PHONE 7-7334
LEONARD STRAUSS, Resident Engineer

MAIN OFFICE: KANSAS CITY, MO.
LONG DIST. PHONE 169
HARRY B. STRAUSS, Manager

FOR SALE: One Worthington Horizontal 3½ x 10 Duplex enclosed self oiling, double acting piston pattern power pump fitted with double reducing gears and motor base with one 50 H.P. G.E. type K. T. 40 deg. three phase 60 cycle 2200 volt 1200 R.P.M. synchronous speed motor including hand compensator. Grayburg Oil Company, San Antonio, Texas.

Sucker Rods, once run, in Okla. City field. Complete stock ¾", ⅞" and 1", available in truck loads of 10,000 ft. or more. These rods all alloyed. Delivered at reasonable point. Stock carried at Oklahoma City and Wichita, Kan.
MIKE TRAVIS
1702 S. Boulder Tulsa, Okla.

FOR SALE OR RENT: Gas engine powered Rotary Drilling Rig complete. Suitable for 4,500' drilling. Box 1360, Phone 312, Seminole, Okla.

FOR SALE: Model F-37 Fort Worth Spudder with Waukesha convertible gas diesel engine, 185 Horse Engine. Will either sell complete with or without string of tools with no cable. Box 2018, Phone 4548, Tyler, Texas.

STABILIZER
Tulsa Type 30" x 34'-⅝" Shell riveted and welded at seams. Tested 450#. 15 bubble trays 20" spacing and one spaced 24", also 2 mist extractor trays 12" apart. 1—12½" heating element in bottom 86' heat exchange and 2 condensers on top 12½" x 4'-10½" having 86' heat exchange each.
W. S. SMITH
523 Thompson Bldg. Phone 2-5473
Tulsa, Okla.

DERRICKS
All sizes for pumping and drilling.
Al Brown Supply Co.
Box 841 Kilgore, Texas

30,000 Ft. good used 2" Tubing, 5⅓, 6¼, 6⅝, 8 and 10" casing. Daniel A. Moritz Co. Phone McKeesport, Pa., 9191.

FOR SALE: 6 x 16 Wilson-Snyder Power Slush Pump. Melton Supply Co., Seminole, Okla.

ONE LONGYEAR Core Drilling Machine, 2,500-foot capacity, 3-inch drill pipe, motor driven pump, complete ready for work. Box A-761, The Oil and Gas Journal, Tulsa, Okla.

FOR SALE
1—25 H.P. Superior Gas Engine—2 Cycle.
1—25 H.P. Superior Gas Engine—4 Cycle.
1—35 H.P. Superior Gas Engine—4 Cycle.
Complete with reversible clutch. In fine shape, now running. Box A-750, The Oil and Gas Journal, Tulsa, Okla.

5000 feet—5" OD x 3½" ID Hydraulic Seamless pipe with threads and collars—$1.25 per foot f.o.b. Oklahoma City, Oklahoma. BROWN-STRAUSS CORPORATION, 212 COLCORD BUILDING, OKLAHOMA CITY, OKLAHOMA. PHONE 2-2922.

Selected Crude Prices

Representative selected crude prices from all sections of the country appear below:

Gravity Schedules

Top prices include all gravities above grades designated, and low prices include all gravities below grades designated:

Gravity	Signal Hill Calif.	Okla. homa, Kansas	Gulf Coast, Texas	West Texas, Lea County, N. M.
18-18.9	$0.80	...	...	...
19-19.9	.84	...	$1.06	$0.70
20-20.9	.88	$0.85	1.08	.72
21-21.9	.92	.87	1.10	.74
22-22.9	.96	.89	1.12	.76
23-23.9	1.00	.91	1.14	.78
24-24.9	1.03	.93	1.16	.80
25-25.9	1.07	.95	1.18	.82
26-26.9	1.11	.97	1.20	.84
27-27.9	1.15	.99	1.22	.86
28-28.9	1.18	1.01	1.24	.88
29-29.9	1.20	1.03	1.26	.90
30-30.9	1.23	1.05	1.28	.92
31-31.9	...	1.07	1.30	.94
32-32.9	...	1.09	1.32	.96
33-33.9	...	1.11	1.34	.98
34-34.9	...	1.13	1.36	1.00
35-35.9	...	1.15	1.38	1.02
36-36.9	...	1.17	1.40	1.04
37-37.9	...	1.19	1.42	1.06
38-38.9	...	1.21	1.44	1.08
39-39.9	...	1.23	1.46	1.10
40 and above	...	1.25	1.48	1.12

East Texas	$1.25
Conroe	1.43
Tepetate, Louisiana	1.18
Smackover, Arkansas, heavy	.83
Illinois basin	1.37
Pecos County, Texas	.95
Lance Creek, Wyoming	1.12
Bradford, Pennsylvania	2.75

Gulf Coast Markets

(Continued from Page 105)

15 as reported by the Gulf Coast Refiners Association decreased 159,301 bbl. as compared with those of November 1. This is movement in addition to the output of independent refineries for the period. Total gasoline inventories November 15 were 1,242,432 bbl. There was a slight increase in stocks of aviation gasoline, which totaled 210,162 bbl., as against 200,825 bbl. on November 1, but substantial decreases were made in stocks of motor fuel and blending naphthas.

The report showed kerosene stocks 378,896 bbl., an increase of 11,486 bbl.; diesel gas-oil stocks 616,084 bbl., a decrease of 41,183 bbl.; diesel-fuel stocks 20,828 bbl., an increase of 9,214 bbl.; stocks of other gas oils 1,061,204 bbl., an increase of 174,154 bbl.; No. 5 fuel oil stocks of 374,908 bbl., a decrease of 86,014 bbl., and Bunker C fuel stocks of 522,791 bbl., a decrease of 7,512 bbl.

Bunker C fuel is holding firm at 85 cents both to bunker and cargo buyers.

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